Milestone Report

208

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

SOUTHERN CALIFORNIA ASSOCIATION OF GOVERNMENTS

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MILESTONE REPORT
A REGIONAL PROFILE

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water quality management —
CA, Southern

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CHAPTER I

INTRODUCTION AND EXECUTIVE SUMMARY

Introduction

SCAG's 208 Planning Program

The Southern California Association of Governments (SCAG) is currently preparing a 208 Areawide Waste Treatment Management Plan for the South Coast area. Preparation of such 208 Plans throughout the Nation is required by Section 208 of the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500). These areawide plans are scheduled to be submitted to the U. S. Environmental Protection Agency by November 1, 1978 for approval.

SCAG's 208 planning program is comprehensive, integrating population, housing, employment and land use forecasting, air quality management, sewage treatment facility capacity needs, water quality assessments and water quality control with waste treatment management needs of the region, and emphasizing nonpoint sources. In addition, 208 planning must link together management and technical planning for both point and nonpoint sources of pollution.

SCAG's 208 program is proceeding in two phases. Phase I (November 1976 - October 1977) involved data acquisition and problem analysis. Phase II (November 1977 - November 1978) involves evaluation and selection of alternative water quality management strategies. Phase II activities are structured into an Early Action Program, a Priority Action Program, a Comprehensive Policy Program, and a Continuing Planning and Action Program.

The institutional and political intricacies of Southern California have led to a complex process for 208 planning. SCAG has contracted with the following participating agencies to help develop the 208 Plan: the City of Los Angeles; the Counties of Los Angeles, Orange, Riverside and San Bernardino; the Newport-Irvine Waste Management Planning Agency; the Santa Ana Watershed Project Authority; and the Ventura Regional County Sanitation District. In addition, the Los Angeles, Santa Ana, and San Diego Regional Water Quality Control Boards are preparing portions of the plan under formal agreement with SCAG. Three committees (Citizens, Program, Environmental Quality and Resource Conservation) advise and direct the 208 Program Staff, with ultimate decision-making authority resting with SCAG's Executive Committee.

South Coast 208 Planning Area

The South Coast 208 planning area boundaries consist of a combination of political and watershed boundaries. The planning area consists of the following portions:

- o Los Angeles County: all of Los Angeles County included within the Los Angeles and Santa Clara River Basins, including all of the City of Los Angeles.
- o Ventura County: the small portion of southeast Ventura County within the Los Angeles River Basin.
- o Orange County: all of Orange County.
- o Riverside County: all of Riverside County within the Santa Ana River Basin; plus a small portion of southwest Riverside County within the San Diego River Basin (Region 9) boundaries.
- o San Bernardino County: all of San Bernardino County within the Santa Ana River Basin.

Figure I-1 is a map of the South Coast planning area, showing county boundaries and boundaries of SCAG Regional Statistical Areas.

Purpose and Organization of the Report

This report is a summary of a large amount of background data collection and problem analysis accomplished during Phase I of SCAG's 208 Program. The report summarizes information in over 75 technical reports prepared by participating agencies in the 208 Program. The report is organized into two parts:

Part I consists of this summary chapter (I) plus the following chapters: Policy and Institutional Framework (II); Population, Housing, Employment and Land Use (III); Utility Systems (IV); and Air Quality Considerations (V).

Part II of the report consists of the following chapters: Water Quality Conditions (VI); and Nonpoint Source Assessment (VII); and Major Water Quality Management Issues (VIII).

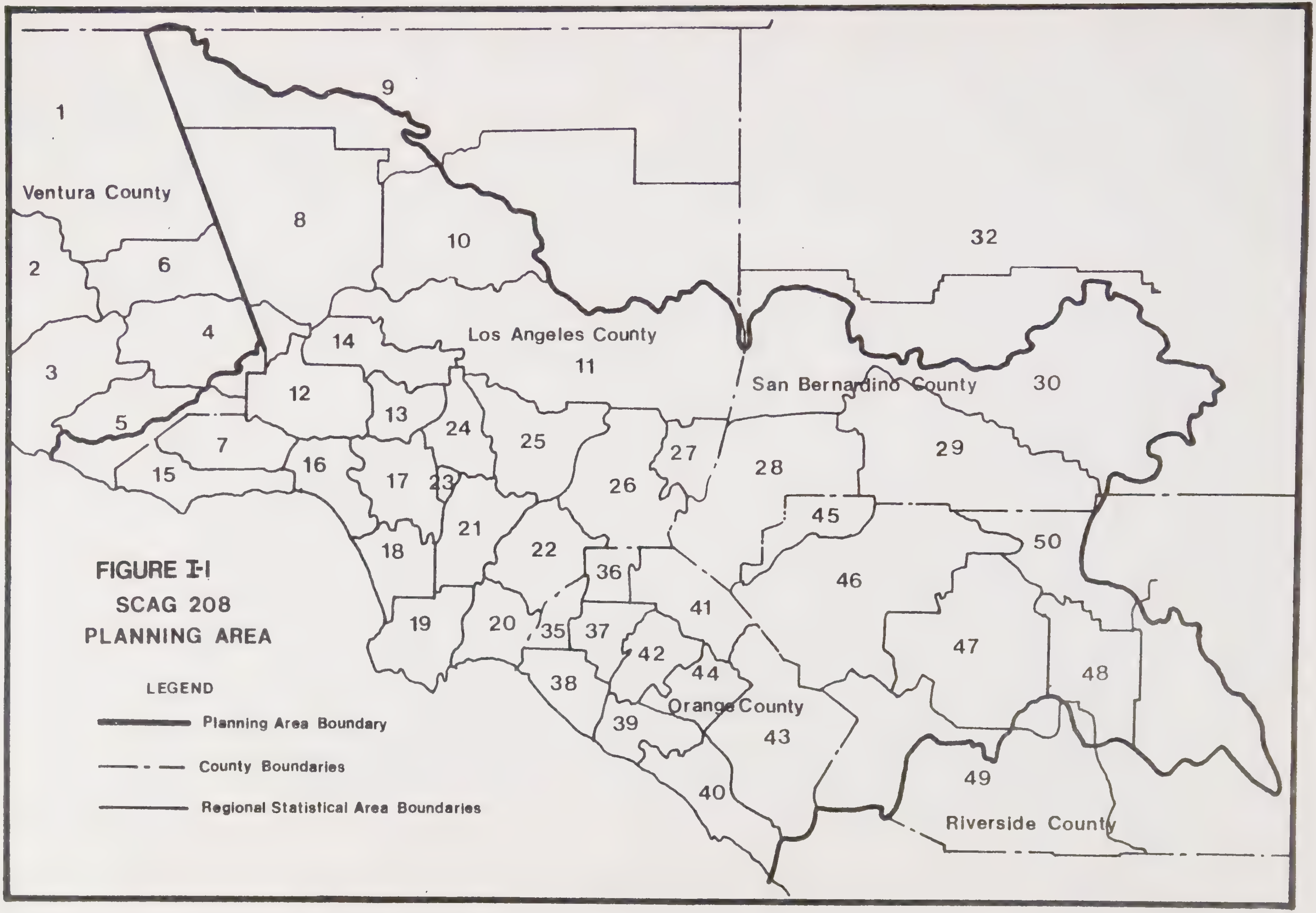


FIGURE I-1
SCAG 208
PLANNING AREA

LEGEND

Planning Area Boundary

County Boundaries

Regional Statistical Area Boundaries

Executive Summary

Chapter II: Policy and Institutional Framework.

The policy framework for environmental management is reviewed in the first part of this chapter; Federal, State, and regional policies on water quallty, air quality, water supply, land use, solid waste, and general environmental policy are addressed. For water quality policy, the national strategy is set forth in the Federal Water Pollution Control Act Amendments of 1972 (PL 92-500), as amended in 1977.

The major objective set forth in PL 92-500 is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To achieve this objective, the law includes the following provisions:

> "It is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;"
>
> "It is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;"
>
> "It is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;" and
>
> "It is the national policy that areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each State."

State water quality policy is determined by the Porter-Cologne Act and the policies, plans, and programs of the State Water Resources Control Board and Regional Water Quality Control Boards.

The institutional framework for water quality management in the South Coast area is reviewed in the second part of Chapter II.

General conclusions of this review are:

- The South Coast Area has an extremely complex institutional framework for water quality management, perhaps one of the most complex in the nation. It consists of interactions between numerous Federal, State, regional and local agencies. Local agencies are represented by over 120 cities, 5 counties, and over 250 water quality related special districts.

- Given the diffusion of water quality management activities among the hundreds of agencies on several levels of government, the institutional framework for water quality management in the South Coast area is fragmented. Fragmentation, in and of itself, is not necessarily a flaw in the institutional framework, as long as water quality responsibilities are sufficiently coordinated between agencies and directed toward consistent goals and objectives. This is not always the case, however.

- The institutional structure for wastewater treatment is centralized in Orange and Los Angeles Counties among three large sanitation entities: the City of Los Angeles, the Los Angeles County Sanitation Districts, and the County Sanitation Districts of Orange County. Wastewater treatment responsibility in the less urbanized counties of Riverside and San Bernardino is spread among several smaller districts and general purpose governments.

- The focus of water quality management generally has been on the control of point sources of pollution. More recently, there has been a growing awareness of the significance of nonpoint source pollution. There is currently no overall regional management system for control of nonpoint source pollution.

- Responsibility for nonpoint source pollution control is diffused among numerous local, regional, State and Federal agencies.

- Water quality management is only part of water resources management, which in turn is only one part of integrated environmental management. Water supply, water quality control, and flood control are interdependent activities. The functioning of these management activities should be based on consistent objectives to assure integration.

Chapter III: Population, Housing, Employment, and Land Use

Chapter III presents the baseline (working) forecast for 208 planning and examines forecasts prepared by other agencies. The following topics are reviewed in this chapter: the baseline forecast for the six-county SCAG region; the baseline forecast for the South Coast 208 planning area; methods and assumptions underlying the baseline forecast; the range of forecasts prepared by other local agencies; and a comparison and preliminary assessment of different growth forecasts.

The six-county SCAG region encompasses Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial Counties. In 1975, about 10,486,000 people lived in the SCAG region. Most of the population resides in Los Angeles County (7,021,000, or about 67%), with the remainder in Orange County (1,721,00, or about 16%), San Bernardino County (696,000, or about 7%), Riverside County (532,000 or about 5%), Ventura County (432,000, or about 4%) and Imperial County (83,000, or about 1%). The baseline population forecast for the year 2000 indicates that the total population of the six-county SCAG region will increase to 13,295, 000, an increase of about 27% over 1975.

Although the South Coast 208 planning area has about one-sixth the total acreage of the SCAG region, in 1975 it contained about 92% of the population of the SCAG region, or about 9,619,000 people. The baseline forecast for the South Coast planning area shows an increase from 9,619,000 people in 1975 to 11,798,000 people in the year 2000, a 23% increase. Table I-1 presents a summary of the baseline forecast for the South Coast planning area. The baseline demographic forecast is essentially a modification of the existing "SCAG-76" growth forecast policy to reflect more recent data.

Participating agencies in the 208 Program have compiled literally hundreds of demographic forecasts prepared by local governments and special purpose agencies. Generally, each is prepared using different areas; comparison of these forecasts is hindered by these differences. To reflect the forecasts prepared by different local agencies, a range of population forecasts has been prepared for 208 planning. The 1990 population forecast range for county planning areas within the South Coast planning area is as follows: the baseline forecast is about 11,046,000, the low end of the range is about 9,992,000, and the high end of the range is about 12,304,000.

TABLE I-1

SUMMARY OF BASELINE (SCAG-76M) POPULATION AND LAND USE FORECASTS FOR THE SOUTH COAST 208 PLANNING AREA

Population

County Planning Area	1975	2000	% Increase
Los Angeles/Ventura	6,946,000	7,726,000	11.2
Orange	1,722,000	2,656,000	54.2
Riverside	389,000	634,000	63.0
San Bernardino	559,000	782,000	39.9
TOTAL	9,619,000	11,798,000	22.7

Land Use (Urban Acres)[a]

County Planning Area	Base Year	2000	% Increase
Los Angeles/Ventura	629,000(1975)	655,450	4.3
Orange	170,000(1973)	240,000	41.2
Riverside	99,000(1975)	123,000	24.2
San Bernardino	101,000(1974)	122,000	19.8

Source: SCAG. Regional Population, Housing, Employment, and Land Use Forecasts; Baseline and Range, 208-5, Volume I, Table S-1, as corrected in Errata Sheet to report.

[a]Sum of residential, commercial, industrial, transportation/utilities, and institutional uses.

Chapter III also presents comparisons and preliminary air and water quality assessments of selected forecasts prepared by participating agencies, using the SCAG-76 forecast as a basis for comparison. Although there are differences in forecasting methods and assumptions, and although the assessment methods used are general, some preliminary conclusions are drawn:

- SCAG-76 population forecasts either agree with or are below most of the population forecasts which have been compiled.

- SCAG-76 land use forecasts tend to project fewer urban acres in suburban or rural areas than most of the other forecasts which have been compared.

- Future growth associated with any of the forecasts will increase wastewater generation and water demand. Water supply and sewer capacity problems currently exist in some suburban and rural areas. Future growth may create additional capacity problems in growth areas if implementation of planned facilities is delayed.

- Future growth associated with any of the forecasts will occur in many places on land overlying aquifers, tending to reduce percolation area to groundwater basins.

- Future growth associated with any of the forecasts could tend to worsen some of the known nonpoint source related water quality problems; this conclusion is tentative, and can be verified only through detailed water quality assessments.

- Differences in air pollutant emission indices are associated with different forecasts, but the impacts on ambient air quality cannot be determined through examining emission indices alone.

Chapter IV: Utility System Overview

Chapter IV presents an overview of wastewater management, water supply, stormwater management, and residual waste disposal/resource recovery systems in the South Coast planning area (reviewed below) plus background information on transportation and energy systems.

Wastewater management is provided by numerous special districts and local governments in the South Coast area; over 45 major municipal treatment plants are currently in operation (see Table I-2). Future planned improvements include consolidations, expansion of capacity, and upgrading in many locations. Water supply for the area is mostly imported, with some reliance on local surface and groundwater supplies; sources of imported water are the Owens Valley (City of Los Angeles), State Project Water from Northern California, and Colorado River Water.

TABLE I-2

EXISTING MAJOR WASTEWATER TREATMENT PLANTS
IN THE SOUTH COAST PLANNING AREA-1975

Operator and Name of Plant	Population Served	Capacity (mgd)	Current Average Flow(mgd)
LOS ANGELES COUNTY[a]			
Los Angeles County Sanitation Districts-Joint Outfall System	3,650,000	497.5	415.0
- Joint Water Pollution Control Plant	N/A	385.0	330.0
- Pomona Water Reclamation Plant	N/A	10.0	8.0
- Whittier Narrows Water Reclamation Plant	N/A	15.0	15.0
- San Jose Creek Water Renovation Plant	N/A	37.5	28.0
- Los Coyotes Water Renovation Plant	N/A	37.5	24.0
- Long Beach Water Renovation Plant	N/A	12.5	10.0
Las Virgenes Municipal Water District-Tapia Water Reclamation Plant	36,700	8.0	4.2
City of Burbank Water Reclamation Plant	50,000	6.0	5.7
City of Glendale-LA/Glendale Water Reclamation Plant	123,000	20.0	20.0
City of Los Angeles			
- Hyperion Treatment Plant	2,843,000	420.0	343.0
- Terminal Island Treatment Plant	113,000	30.0	20.5
Los Angeles County Sanitation Districts			
- Saugus-Newhall Water Reclamation Plant (District # 26)	39,100	5.0	3.3
- Valencia Water Reclamation Plant (District #32)	15,000	4.5	1.7
City of Avalon Treatment Plant	N/A	0.3	N/A
ORANGE COUNTY[b]			
County Sanitation Districts of Orange County - Plants No. 1 and No. 2	1,520,000	184.0	171.0
Aliso Water Management Agency			
- Laguna Beach Coastal Plant	18,000	4.0	1.8
- South Laguna Sanitary District Coastal Plant	11,400	2.5	N/A
- El Toro Water District Plant	34,900	4.0	2.1
- Los Alisos Water District Plants(2)	10,800	3.5	1.3
- Moulton Niguel Water District Plants(2)	13,600	0.8	N/A

TABLE I-2 (Cont'd.)

Operator and Name of Plant	Population Served	Capacity (mgd)	Current Average Flow (mgd)
Southeast Regional Reclamation Agency			
- SERRA Regional Treatment Center	49,000	9.0	4.9
- Moulton Niguel Water District Plant ID-3A	5,000	0.5	0.5
- San Clemente Wastewater Reclamation Plant	25,500	4.0	2.6
- Capistrano Beach Treatment Plant	8,100	0.8	0.8
Irvine Ranch Water District Treatment Plant	34,900	7.0	3.4
SAN BERNARDINO COUNTY[c]			
Chino Basin Municipal Water District			
- Plant No. 1	143,000	16.0	13.8
- Plant No. 2	29,800	5.7	3.5
City of Fontana Plant	28,700	2.7	2.7
California Institute for Men Plant	7,900	1.2	0.8
City of Rialto Plant	25,700	4.0	2.7
City of Colton Regional Plant	26,500	2.4	2.4
City of San Bernardino-Plant No. 2	159,872	27.0	15-17
City of Redlands Regional Plant	26,680	3.0	3.0
Big Bear Community Services District/ Big Bear Lake Sanitation District	14,391	2.1	1.6
RIVERSIDE COUNTY[c]			
City of Corona Regional Plant	65,700	5.5	4.5
City of Riverside Regional Plant	151,000	26.0	18.2
Jurupa Community Service District	9,700	1.2	1.2
Edgemont Community Service District	4,200	0.5	0.4
City of Beaumont	6,500	0.8	0.6
Eastern Municipal Water District			
- Hemet/San Jacinto Plant	32,400	5.0	3.3
- Sunnymead Plant	6,700	2.0	1.0
- City of Perris Plant	4,000	0.5	0.4
- Sun City Plant	6,200	1.0	0.6
Idyllwild County Water District	1,359	0.4	0.1
March Air Force Base			
- Main Plant	3,400	1.5	0.3
- West Plant	2,000	1.0	0.2
City of Lake Elsinore Plant	4,016	0.5	0.4

[a] Los Angeles County and Los Angeles City. Wastewater System Data Compilation and Analysis. 208 Planning Task 2 Final Report, 1977. Additional data derived from Los Angeles County Sanitation Districts Facilities Plan, Las Virgenes MWD Facilities Plan, and Work Plan for Upper Santa Clara River Basin.

[b] Orange County and NIWA. Wastewater System Data Compilation and Analysis. 208 Planning Task 1 (NIWA) and 2 (Orange County) Final Report, 1977.

[c] SAWPA. Wastewater System Data Compilation and Analysis. 208 Planning Task 2 Final Report, 1977.

Stormwater management is largely the responsibility of county flood control districts and the U. S. Army Corps of Engineers; the urban portions of the South Coast area is afforded flood protection and runoff conservation through a system of storm drains and channels, debris basins, dams and reservoirs, and spreading grounds. Residual waste disposal is currently accomplished through a multi-agency collection and disposal system utilizing over 30 major landfills in the South Coast area; several future energy or resource recovery projects are planned.

Chapter V: Air Quality Conditions

Chapter V presents a summary of existing air quality in the South Coast Air Basin and addresses primary impacts. While significant progress has been made in reducing high concentrations of pollutants in the South Coast Basin, air pollution remains a serious problem. Federal and State air quality standards established to protect public health are violated in many areas of the Basin. Photochemical oxidant is the most serious air pollution problem in the South Coast Air Basin where maximum oxidant readings exceed the Federal air quality standard (8pphm) by at least a factor of two. In the eastern and central portions of the Basin, the Federal standard may be exceeded by factors of four to six each year. These areas experience higher readings because they are generally downwind of the source-intensive western-central portions of the Basin, and oxidant, a secondary contaminant, is formed by exposure to sunlight as hydrocarbons and nitrogen oxides are transported across the Basin.

Air Quality in the South Coast Air Basin also does not meet State and/or Federal standards for carbon monoxide, nitrogen dioxide, total suspended particulates, sulfur dioxide, sulfates and lead. Since 1973, the Federal standard for sulfur dioxide has been attained. All of the Basin has been designated by the EPA as an Air Quality Maintenance Area for the five Federally-regulated pollutants. Federal and California law requires an air quality maintenance plan to be developed which provides not only for achieving State and Federal air quality standards but establishes measures to ensure that the standards will be maintained over the next twenty years.

Chapter VI: Water Quality Conditions

Chapter VI presents an overview of water quality conditions and discussion of known and suspected water quality problems in the South Coast area. Water quality problem areas include those water segments where standards are presently not being met or where they may potentially not be met. The management of these areas involves identification of sources and impacts of pollution, development and implementation of control measures, and establishment of monitoring programs to attain and maintain water quality standards.

Marine Water quality. Marine waters in the South Coast area include coastal wetlands and estuaries, harbors and bays, and nearshore and offshore regions of Los Angeles and Orange Counties. Types of pollutants of major concern to this area are: (1) trace elements such as heavy metals, (2) organic materials such as chlorinated hydrocarbons, (3) bacteria and viruses, (4) nutrients, (5) sediments, (6) petroleum wastes, and (7) other physical-chemical parameters such as heat, turbidity and changes in salinity.

Pollutants are introduced to the Southern California Bight via both point and nonpoint sources. The major point sources consist of municipal, thermal and industrial wastes which are discharged into the nearshore ocean waters. Nonpoint sources of pollutants have four major components: (1) surface runoff, which includes wastes from streams and storm drains in urbanized and agricultural areas; (2) vessel wastes, which include human domestic wastes, bilgewater, residues from paints and anode corrosion and ocean dumping; (3) aerial fallout from rainfall washout or dry fallout, and (4) advective or current transport which brings pollutants originating in other areas to the Southern California Bight. Other nonpoint sources include oil seepage, oil spillage, cliff and shore erosion, and sewage leaching fields.

As more controls for municipal and industrial point sources become required, increased efforts to mitigate nonpoint source pollutants will be necessary. Presently attempts are being made to identify water quality problems related to nonpoint sources, to determine their severity and extent and to develop actual control measures. In urbanizing areas along the coast, surface runoff is of concern. A major effort appears to be needed to control vessel wastes. The increasing popularity of recreational boating indicates that vessel-related pollution should increase over the next two decades. Pollutants from aerial fallout should decrease with improved air pollution control and reduced use of leaded fuels.

Direct impacts to the marine environment are difficult to assess and can only be expressed in general terms at this time. Research in this area has expanded greatly during the past decade, and commitments have been made to continue this pursuit.

Surface Water Quality. Certain surface waters in the region are affected by bacterial contamination, increased levels of nutrients, erosion and siltation, which limit recreational uses and aesthetic enjoyment. Other problems relate to impairment of drinking water in mountain areas and to increased mineralization of surface waters which are used for groundwater recharge and agricultural purposes. Surface waters include mountain watersheds, lakes and streams as well as rivers, creeks, and lagoons.

Sources of bacterial contamination vary and include irrigation runoff, septic tank failures, runoff from dairy sites, industrial discharges, urban runoff, improperly treated wastewater, and animal wastes (livestock, pets, and wild animals).

High nutrient levels in several water bodies in the region may overstimulate algae growth and create other water quality problems associated with eutrophication. High nutrient levels have been noted in Lake Elsinore, Big Bear Lake, Malibu Creek, Sulphur Creek Reservoir, Lake Sherwood, and Newport Bay; causes of high nutrients and possible control measures differ for each of these water bodies.

Increased levels of total dissolved solids (TDS) is a continuing water quality problem in parts of the region. High TDS limits its agricultural usefulness, impairs water used for groundwater recharge, and may make water unpalatable. The Santa Ana River, the Upper Santa Clara River, San Joaquin Marsh, Lake Elsinore and San Juan Creek are affected by this problem.

Erosion and siltation in or from mountain watersheds may cause aesthetic deterioration, such as water discoloration and accumulation of debris and odors, as well as flooding and habitat destruction. Natural erosion processes are severely aggravated by roads, construction, fires and damage to vegetative cover.

Groundwater Quality. Salt balance and increased levels of total dissolved solids (TDS) and nitrate are the major concerns of groundwater quality management in the South Coast region. High TDS concentrations restrict potable, agricultural and certain industrial uses of groundwater; excessive nitrate concentrations are linked to methemoglobinemia in babies (blue-baby syndrome). Other groundwater problems, which are generally local, include undesirable concentrations of iron, manganese, chloride, sulfate, sulfide, methane, boron, fluoride, selenium and organics. In many areas, water quality objectives are exceeded for one or more of these constituents.

The recent drought has intensified the problem of increasing TDS. Extended below average rainfall has limited the availability of higher quality (low TDS) water and has resulted in further pumping of groundwater, and further lowering of the water tables. Natural geologic conditions, agricultural operations, overpumping and wastewater disposal to percolation ponds, have led to the gradual mineralization and deterioration of groundwater.

Suspected sources of high nitrate concentrations in groundwater include percolation of irrigation water, excessive fertilization, septic tank effluent, effluent percolated from sewage disposal ponds, and interchange between aquifers. Minor sources may include nitrates from air emissions and dust fall, and nitrate from the decomposition of natural vegetation. Groundwater in many areas exceeds the U. S. Public Health Service limit for nitrate and requires blending before distribution to users.

Feasible control and abatement measures, however, involve minimizing further degradation of groundwater quality rather than expecting significant improvements in the near future to existing quality. Additional studies are needed to locate and isolate sources, and a continued pumping management program is needed to control migration of degraded water.

Representative Water Quality Problems for Early Action. Seven representative water quality problems in the region were considered for inclusion in the "Early Action Program" of 208 planning. Alternative management strategies for these problems were studied to see if solutions could be implemented in the immediate future. The problems are: (1) nutrient and sediment loads to Lake Sherwood, (2) nutrient flows to Sulphur Creek Reservoir, (3) sewage sludge disposal in the San Diego Creek Watershed, (4) effects of water conservation on the Hyperion Treatment Plant, (5) high total dissolved solids (TDS) in groundwater above Prado Dam, (6) dairy wastes in the Ontario-Chino-Corona area, and (7) the unsewered community of Rhodelia Avenue.

Water Quality Problems/Issues for Priority Action. A large number of priority water quality problems and issues in the South Coast area were selected and ranked on the basis of three criteria: seriousness, representativeness and achievability of solution in the near future (based upon work which could be conducted during Phase II of the 208 Program). Those selected for inclusion in the "Priority Action Program" of 208 planning are (1) Newport Bay, (2) wastewater treatment management reclamation planning in the South Coast area, (3) waste treatment management in unsewered areas in the Malibu area, Los Angeles County, (4) municipal and industrial sludge management in the Los Angeles/ Orange County Metropolitan area, and (5) mitigation of secondary air impacts associated with sewage treatment plant capacity.

Chapter VII: Nonpoint Source Assessment

Wasteloads from nonpoint sources are of increasing concern in the South Coast region. Point source control programs, under the State Water Resources Control Board and Regional Water Quality Control Boards, have effectively reduced wasteloads from municipal and industrial discharges, but nonpoint source controls have not been so successful.

Control levels for nonpoint sources have been difficult to establish since sources are diffuse and difficult to locate precisely, the amount and types of pollutants are not well-documented, and the impact on water quality and environmental degradation is difficult to trace. For these reasons, nonpoint source management generally requires preventive management strategies to avoid potential water quality problems.

Figure I-2 indicates point and nonpoint sources of wastes which are known or suspected to significantly influence water quality in selected water bodies in the South Coast area.

The following non-point sources are discussed in this chapter:

- Surface runoff from urban, agricultural, construction sites and mountain/foothill areas
- Aerial fallout
- Residual wastes, including municipal solid wastes improper on-site wastewater disposal, sewage treatment sludges, industrial wastes and spills of hazardous substances
- Water supply operations affecting saline water intrusion and salt balance
- Sand and gravel mining

Surface Runoff. Surface runoff is that portion of rainfall (or melted snow) that flows across ground surfaces and eventually is returned to streams and oceans. Runoff can pick up nonpoint pollutants from the air or the land and carry them to receiving waters. During storm conditions, surface runoff is of concern from both a flood control and a non-point waste transport standpoint.

General sources of wastes in surface runoff include vehicles, vegetation and litter, wear products from buildings and streets, spills of hazardous materials, animal wastes, erosion sites, aerial fallout, fertilizers, pesticides, and fire-fighting chemicals.

Figure I-2

Selected Water Bodies in the South Coast Area

versus

Point and Non-point Sources of Pollutants

NOTE: "X" indicates a known or suspected source contributing to an existing or potential water quality problem.

	POINT SOURCES Municipal Discharge	Industrial Discharge	Thermal Discharge	NON-POINT SOURCES Urban Runoff	Rural Runoff	Agricultural Activities	Construction Activities	Recreational Activities	Septic Tanks, Unsewered Communities	Wild Fires	Oil Fields	Vessel Wastes	Saline Water Intrusion	High TDS Water Supply
SURFACE WATERS Big Bear Lake				X	X			X	X	X				
Coyote Creek	X	X		X		X			X					
Lake Elsinore					X	X		X	X					
L.A.-Long Beach Harbor	X	X	X	X								X		
Malibu Creek	X			X	X	X		X	X					
Mountain Watersheds					X		X	X	X	X				
Nearshore Zone	X	X	X	X	X	X					X	X		
Newport Bay	X			X	X	X	X					X		
Salt Creek					X		X							
San Joaquin Marsh														
San Juan Creek				X	X	X								
Santa Ana River	X	X		X	X	X								X
Santa Monica and San Pedro Bays	X	X	X	X							X	X		
Sunset/Huntington Harbour				X		X					X	X		
GROUNDWATERS Aliso Creek Basin														X
Coastal Aquifers									X				X	
San Juan Creek Basin						X			X					X
Santa Ana River Basin						X			X					X
Upper L.A./San Gabriel River Basin						X			X					
Upper Santa Clara River Basin						X					X			

An extensive streamflow and precipitation monitoring network exists in most parts of the South Coast area. Dry weather streamflow data are also available in most locations. However, water quality data on stormflow and surface runoff are limited. Monitoring programs need to be expanded to determine accurately the origins, concentrations and mass loads of wastes carried in surface runoff.

In addition, the impacts of runoff and effectiveness of alternative control and abatement measures need to be determined. This requires improving the methodology of data collection and increasing (1) the frequency of sampling, (2) the number of monitoring sites, and (3) the number of constituents analyzed.

In the South Coast area, the major components of surface runoff are (1) urban runoff, (2) agricultural runoff, (3) runoff from construction sites, and (4) runoff from mountain/foothill areas.

Urban Runoff. Major types of pollutants in urban runoff are sediment, turbidity, organic substance, BOD, trace metals (particularly lead), and pathogens. Reliable estimates of the quality and quantity of wasteloads of urban runoff are not available, although rough approximations have been attempted. Programs are now being developed to collect necessary data and to control the quality of urban runoff.

Agricultural Runoff. Pollutants which can originate from agricultural sources include salts, nutrients, biocides, oxygen demanding substances, sediment, trace metals and pathogens. In the Upper Santa Ana Watershed (Riverside and San Bernardino Counties 208 planning areas), salinity is the major water quality problem caused by agriculture, followed by BOD, sediments and pathogens. In Orange County, the principal agricultural pollutant is sediment and possibly nutrients.

Construction Site Runoff. Sediment from construction sites, carried by runoff to receiving water bodies, is the major pollutant from construction activities. Other pollutants, such as oil, grease, nutrients and pesticides, adhere to the sediment and are carried along. The volume of sediment from construction activities reaching receiving waters has not been segregated from the total sediment load.

Mountain/Foothill Runoff. During storm conditions, large amounts of sediment can be eroded from streams in the mountain and foothill areas. These sediments are carried along through drainage channels until they are deposited in the nearshore zone at the mouth of the channels. In enclosed wetlands and estuaries, these excessive deposits of sediments are a threat to the aquatic environment. Control measures such as debris dams and retention basins are partially effective, but increased monitoring and study are needed to determine accurately the sediment wasteloads.

Aerial Fallout. Airborne heavy metals, biocides, and nutrients are contributed to a watershed area in three ways: dry deposition of suspended particulates, dry deposition of atmospheric aerosol, and wet deposition. In wet deposition, raindrops scavenge aerosol and gases from the air and carry them to the ground. Part of the rainfall then becomes surface runoff, adding urban litter as well as aerosol and gaseous products deposited on the surface during dry weather to the pollutant stream. Jet ash fallout and washout may be an important nonpoint source near airports.

Residual Wastes. Residual wastes -- the end product of waste-processing operations and of resource utilization -- include municipal solid wastes, on-site wastewater disposal systems (unsewered communities), sewage treatment sludges, industrial wastes and hazardous wastes.

Solid waste disposal. Disposal of solid wastes to refuse pits, dumps and landfills may contaminate local groundwater and surface water supplies through percolation of leacheate or by runoff erosion. Regulatory control of landfill sites by the Regional Water Quality Control Boards has been effective in controlling such pollution. No documented cases of leachate contamination of ground or surface waters exist, and all improprer disposal sites have been or are being eliminated.

Unsewered communities. Overflows and seepage from septic tanks, cesspools, and leaching fields endanger surface and groundwater quality. Failure of private disposal systems may cause bacterial and viral contamination and high nitrate concentrations. There are numerous unsewered communities throughout the region, some of which are suspected causes of groundwater degradation. Facility planning programs are studying many of the potential problem areas for control measures such as sewering and septic tank management.

Sewage treatment sludges. Sludges in the South Coast area are disposed of on nearby farmlands, or dried and sold as soil additives, or hauled to a dump, or discharged to the ocean. The State Ocean Plan will ultimately halt all ocean-outfall discharge of solids; thus there will be increased land disposal of processed sludges or increased resource recovery in the future.

Industrial wastes. Liquid and solid Group I industrial wastes are disposed at Class I sites in Los Angeles County. Other industrial wastes are disposed of in sewers, generally under permit by the appropriate sanitation district, in some on-site ponds, and in deep underground injection wells. Industrial wastes incompatible with sewage treatment processes will be more stringently controlled with the promulgation of new pre-treatment requirements specified under the Clean Water Act of 1977. There is additional concern over the control of authorized wastes to appropriate disposal sites.

Hazardous substances. Increasingly stringent restrictions on disposing of hazardous wastes by sewer system and ocean outfall will probably lead to more use of landfills for their final disposal. Accidental or indiscriminate spills of hazardous substances occur periodically. Generally effective controls exist; however, improvements for clean-up and containment are necessary.

Saltwater Intrusion. Nine groundwater basins in the South Coast area are subject to saltwater intrusion. In many cases, extensive use of these basins for municipal, industrial, and agricultural water supplies has lowered groundwater levels and allowed saltwater intrusion into the freshwater aquilers. Major programs have halted saltwater intrusion into affected basins. Freshwater-injection barriers counteract the flow of saltwater into the basins, and groundwater extractions are being controlled. Continued monitoring is needed to maintain the success of these programs.

Sand and Gravel Mining. Orange County has 16 locations where sand and gravel extraction, rock crushing, concrete mixing, and cement manufacture are carried on. There is no regular discharge of wastewater from these sites, but the silting and storage ponds are not lined, and washwater and equipment wastes could percolate and contaminate the groundwater. Pollution from these sources, while not very serious, should be studied so that corrective measures -- inspections, enforcement of NPDES discharge requirements, and flood control protection -- may be taken to minimize any threat.

Chapter VIII: Water Quality Management Issues.

An issue is defined as "a point in question or a matter in dispute or under discussion". There are many complex and controversial issues involved in areawide waste treatment management planning. Chapter VIII lists summary statements of major water quality management issues.

The issue statements initiate the process of areawide policy development; as the 208 Program progresses, alternative policies will be developed to address each issue, and policies will then be selected for inclusion in the 208 Plan. These policies will establish a context and a set of guiding principles for the development and implementation of the 208 Plan.

Many water quality management issues have been discussed in detail in a previous SCAG report, Priority Water Quality Problems/ Issues for Phase II Planning (208-6). The purpose of that report was to select water quality problems and issues for which solutions can be developed and implementation plans adopted within the two-year planning period, for use in the "Priority Action Program" of SCAG's 208 planning process. This chapter lists the issues described in the above-mentioned report, plus additional major issues, for use in the "Comprehensive Policy Program" of SCAG's 208 planning process. This program will address the full range of water quality problems and issues in the South Coast area through development of an implementable policy framework for water quality management.

Issue statements are presented below for the following areas: water quallty management framework; land use, water quality, and air quality; point source controls (municipal and industrial waste treatment); nonpoint source controls; and water conservation and reclamation.

Water Quality Management Framework

Areawide policies are needed for the following issues:

Issue #1: INSTITUTIONAL ARRANGEMENTS AND MANAGEMENT SYSTEMS FOR AREAWIDE WATER QUALITY MANAGEMENT.

Issue #2: AN AREAWIDE WATER QUALITY MANAGEMENT STRATEGY INTEGRATING POINT AND NONPOINT SOURCE PLANNING AND CONTROLS.

Issue #3: COORDINATION OF WATER QUALITY RESEARCH AND MONITORING ACTIVITIES WITH WATER QUALITY MANAGEMENT PLANNING.

Issue #4: PREVENTIVE AND PROTECTIVE APPROACHES TO WATER QUALITY MANAGEMENT WHICH MINIMIZE THE ENTRY OF POLLUTANTS TO RECEIVING WATERS.

Land Use, Water Quality, and Air Quality

Areawide policies are needed for the following issues:

Issue #5: PREVENTING AND CONTROLLING NONPOINT SOURCES OF POLLUTION THROUGH LAND USE PLANNING AND CONTROL.

Issue #6: PROTECTION OF ENVIRONMENTALLY SENSITIVE LANDS TO PREVENT WATER QUALITY PROBLEMS, INCLUDING PROTECTION OF LAND OVERLYING AQUIFERS FOR RECHARGE PURPOSES.

Issue #7: CONSISTENCY OF WASTEWATER MANAGEMENT PLANNING WITH AREAWIDE GROWTH POLICIES AND DEMOGRAPHIC PROJECTIONS.

Issue #8: MITIGATION OF GROWTH-RELATED AIR IMPACTS OF MUNICIPAL WASTEWATER MANAGEMENT FACILITIES.

Point Source Controls (Municipal and Industrial Waste Treatment)

Areawide policies are needed for the following issues:

Issue #9: FEDERAL AND STATE DISCHARGE REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL DISCHARGERS.

Issue #10: ALLOCATION OF LIMITED STATE AND FEDERAL GRANTS FOR SEWAGE TREATMENT TO THE REGION.

Issue #11: LEVEL OF TREATMENT FOR WASTEWATER DISCHARGED TO THE OCEAN.

Issue #12: INDUSTRIAL PRETREATMENT PROGRAMS TO PREVENT ADVERSE EFFECTS OF TOXIC POLLUTANTS.

Issue #13: STRATEGIES FOR SLUDGE RESOURCE RECOVERY OR DISPOSAL.

Issue #14: EQUITABLE FINANCING MECHANISMS FOR MUNICIPAL WASTEWATER SYSTEMS (USER CHARGES, INDUSTRIAL COST RECOVERY).

Nonpoint Source Controls

Areawide policies are needed for the following issues:

Issue #16: PREVENTIVE MANAGEMENT STRATEGIES FOR CONTROL OF POLLUTANTS IN STORMWATER RUNOFF.

Issue #17: INTEGRATION OF WATER QUALITY GOALS IN STORMWATER SYSTEMS PLANNING AND OPERATION.

Issue #18: INTEGRATION OF WATER QUALITY GOALS IN RESIDUAL WASTE SYSTEMS PLANNING AND OPERATION.

Issue #19: PREVENTIVE MANAGEMENT STRATEGIES FOR RUNOFF AND EROSION CONTROL AT CONSTRUCTION SITES.

Issue #20: PREVENTIVE MANAGEMENT STRATEGIES FOR CONTROL OF AGRICULTURAL SOURCES OF POLLUTION.

Issue #21: PREVENTIVE MANAGEMENT STRATEGIES FOR MISCELLANEOUS NONPOINT SOURCES OF POLLUTION (AERIAL FALLOUT, SALTWATER INTRUSION, SILVICULTURE, AND MINING).

Issue #22: FINANCING AND NEEDED REGULATORY AUTHORITY FOR PLANNING AND IMPLEMENTATION OF BEST MANAGEMENT PRACTICES FOR NONPOINT SOURCE POLLUTION.

Water Conservation and Reclamation

Areawide policies are needed for the following issues:

Issue #23: INSTITUTIONAL, LEGAL, SOCIAL, AND POLITICAL BARRIERS TO INCREASED REUSE OF MUNICIPAL WASTEWATER, INCLUDING EQUITY CONSIDERATIONS.

Issue #24: MONITORING AND CONTROLS FOR WASTEWATER RECLAMATION PROJECTS.

Issue #25: EMPHASIS ON WATER CONSERVATION AND RECLAMATION IN WASTEWATER FACILITIES AND WATER SUPPLY PLANNING.

CHAPTER II

POLICY AND INSTITUTIONAL FRAMEWORK

Introduction

Section 208 plans are comprehensive plans for water quality and waste treatment management. To assure integrated environmental planning and to produce an implementable 208 plan for the South Coast area, it is necessary to recognize and build upon the existing environmental policy framework.

This chapter presents a summary of the policy and institutional framework for SCAG's 208 planning[1]. The first section summarizes Federal, State, and regional environmental policy for several areas of environmental concern. The second section summarizes the Federal, State, regional and local agencies whose activities potentially affect water quality.

Policy Framework

Summarized below is the Federal, State, and regional environmental policy framework in six functional areas: water quality, air quality, water supply, land use, solid waste, and general policy.

Water Quality Policy.

Federal. The Federal Water Pollution Control Act Amendments of 1972 (PL 92-500) set forth the national strategy for controlling water pollution. (PL 92-500 was amended in late 1977; the below discussion does not cover these amendments.) The law sets forth national goals and policies; establishes uniform effluent limitations and requires states to set ambient water quality standards; establishes various levels of water quality planning; and sets up a National Pollutant Discharge Elimination System permit program.

The major objective set forth in PL 92-500 is to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters." To achieve this objective; the law includes the following provisions:

> "it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;"

> "it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;"

"it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;" and

"it is the national policy that areawide waste treatment management planning processes be developed and implemented to assure adequate control of sources of pollutants in each State."

PL 92-500 requires EPA to establish effluent (discharge) standards. For publicly-owned treatment works, secondary treatment was required by July, 1977 and "best practicable waste treatment technology" is required by July, 1983. For other discharges (including industrial), "best practicable" pollution control technology currently available was required by July, 1977 and "best available" technology currently achievable is required by July, 1983. Across the nation, many dischargers have failed to meet the 1977 effluent discharge requirements.

PL 92-500 also requires states to set forth ambient (receiving) water quality standards. The water quality standards are combinations of benefical uses of a water body and the water quality objectives (numeric) necessary to support these uses, and are used as a planning objective by the state. Water bodies incapable of meeting water quality standards through application of applicable effluent limitations are termed "water quality limited" segments, whereas water bodies which presently meet water quality standards or could meet standards through application of uniform effluent limitations are termed "effluent limited" segments.

Of the water quality planning requirements of PL 92-500, three are especially important. Section 208 of PL 92-500 sets up areawide waste treatment management planning for both point sources and nonpoint sources of pollution. Section 201 of the law makes Federal funds available for the planning, design, and construction of municipal treatment works. Section 303(e) of PL 92-500 calls for establishment of a state continuing planning process. Under this authority, water quality control plans for river basins have been prepared. Requirements for 208 and basin planning have recently been combined under revised EPA regulations (40 CFR 131.11).

Enforcement of Federal water pollution law relies largely on NPDES (National Pollutant Discharge Elimination System) permits for point sources of pollution. (In California, NPDES permits are administered by the State Water Resources Control Board and the Regional Water Quality Control Boards.) Each permit sets forth a set of effluent limitations specific to each source and, where limitations are not being met, a legally-enforceable schedule of compliance. Other enforcement mechanisms for Federal water pollution law include U. S. Army Corps of Engineers Section 404 permits under P. L. 92-500, for dredged or fill material, and ocean dumping permits issued pursuant to the Marine Protection, Research, and Sanctuaries Act of 1972 (PL 92-532).

State. The policy framework for water quality control in California is established by the Porter-Cologne Water Quality Control Act, as amended. The Porter-Cologne Act establishes the responsibilities of the State Water Resources Control Board (SWRCB) and nine Regional Water Quality Control Boards. Numerous water quality control policies have been adopted by the SWRCB, including the following: State Policy for Water Quality Control (1972), Nondegradation Policy (1968), Thermal Plan (1972), Ocean Plan (1972), Enclosed Bays and Estuaries Policy (1974), Powerplant Cooling Policy (1975), and the Policy and Action Plan for Water Reclamation (1977).

State water quality standards, consisting of the beneficial uses of surface and ground waters plus the water quality objectives necessary to protect the beneficial uses, have been set by the Regional Water Quality Control Boards in their basin plans. Also, statewide water quality standards have been set by the SWRCB in the Nondegradation Policy, Ocean Plan, and Thermal Plan.

Regional. SCAG has ten policies on water quality which will be revised during the 208 program. Also, the three Regional Water Quality Control Boards in the South Coast area (Los Angeles, Santa Ana, and San Diego) have adopted goals, management principles, and discharge prohibitions in their basin plans.

Air Quality Policy.

The national strategy for air pollution control is set forth in the Clean Air Act of 1970, as amended. The Clean Air Act requires national ambient air quality standards (primary and secondary), standards of performance for new stationary sources, national emission standards for hazardous pollutants, and emissions standards for motor vehicles and aircraft. The Act also requires State Implementation Plans to attain and maintain Federal ambient air quality standards. The Clean Air Act Amendments of 1977 (PL 95-95) have strengthened planning requirements, including (Section 316) the withholding of Federal grants unless State air quality plans are in effect or being carried out.

The two major California air pollution control laws are the Mulford-Carrell Act and the Lewis Air Quality Management Act (AB 250). AB 250 creates the South Coast Air Quality Management District and charges the District with regulatory responsibilities and, together with SCAG, with the development of an Air Quality Management Plan by June 1, 1979.

At the regional level, the South Coast Air Quality Management District has adopted rules related to permits, fees, and emissions standards for stationary sources of air pollution. Also, SCAG has nine adopted air quality policies.

Water Supply Policy.

The Federal law most influential in the quality of water supply is the Safe Drinking Water Act of 1974 (PL 93-523). The Safe Drinking Water Act requires primary drinking water regulations to protect public health, and secondary drinking water regulations to protect other aspects of public welfare.

California policy on water rights and water quality is administered by the SWRCB. Also, the California Department of Water Resources (DWR) has prepared and periodically revises the California Water Plan, a master plan to guide State water resources planning. Two other State or regional agencies with key roles in determining water supply policies are the State Department of Health, which regulates water supply quality, and the Metropolitan Water District of Southern California, which develops, stores and distributes water for domestic and municipal uses.

Land Use

At the Federal level, the Department of Housing and Urban Development administers the "701" program to assist governments in preparing comprehensive plans to guide land-use decision-making. Also, Office of Management and Budget Circular A-95 establishes a system of State and areawide clearinghouses to improve intergovernmental coordination in Federally assisted projects. Lastly, the Coastal Zone Management Act of 1972 (PL 92-583) encourages states to prepare coastal zone management plans.

The two State laws most directly addressing land use are the Williamson Act, which allows lower property tax assessments for agricultural land under certain conditions; and the California Coastal Act of 1976, which requires local governments to prepare local coastal programs consistent with Coastal Act policies. Also, the State Office of Planning and Research, the State's comprehensive planning agency, has recently released a draft Urban Development Strategy which proposes many far-reaching land use policies.

Pursuant to State law, cities and counties are required to prepare general plans, and except for Charter Cities, zoning, and subdivision regulation are required to be consistent with the general plans. At the regional level, SCAG has recently released a draft Land Use Element. SCAG has also adopted over 40 policies related to land use, open space, natural resources, and recreation.

Solid Waste

The major Federal law governing solid waste management is the Resource Conservation and Recovery Act of 1976. This law provides for State solid waste management planning and requires standards for hazardous waste management. Another Federal law related to solid waste management is the Toxic Substances Control Act of 1976, which requires increased testing of toxic substances and gives EPA additional regulatory authority on toxic substances.

In California, the Solid Waste Management and Resource Recovery Act of 1972 created the State Solid Waste Management Board. The Board has established State solid waste management policy which is being implemented through Solid Waste Management Plans prepared by each county in California. Pursuant to the Porter-Cologne Act, the Regional Water Quality Control Boards and responsible for regulating solid waste disposal as it relates to water quality. Also, at the regional level, SCAG has adopted four solid waste management policies.

General Environmental Policy.

The National Environmental Policy Act of 1969 (NEPA) sets forth the national policy on the environment and requires Federal agencies to prepare Environmental Impact Statements for major actions significantly affecting environmental quality. The equivalent of NEPA at the State level is the California Environmental Quality Act (CEQA), which requires government agencies to prepare Environmental Impact Reports for actions significantly affecting environmental quality. Both laws emphasize maximum protection of environmental quality.

Institutional Framework

The existing institutional framework for water quality management in the South Coast area is extremely complex, perhaps one of the most complex in the nation. A multitude of agencies at the Federal, State, regional, and local levels all affect water quality management in different ways. Specific agencies are reviewed below, according to the following categories: special districts, cities and counties, regional agencies, State agencies, and Federal agencies.

Special Districts Related to Water Quality Management.

Special districts have a role in water quality management in the following functional activities: 1) wastewater management, 2) water supply, 3) flood control and surface runoff, 4) solid waste management, 5) land management, and 6) resource management. In the South Coast area, there are over 250 special districts, which fall into 17 general categories; these are listed in Table II-1.

Table II-1

Number and Type of Water Quality Management Related Special Districts in the South Coast Area

TYPES OF SPECIAL DISTRICTS*	LOS ANGELES COUNTY	ORANGE COUNTY	RIVERSIDE COUNTY	SAN BERNARDINO COUNTY
California Water Districts	1	6	4	-
Community Services Districts	-	4	4	1
County Sanitation Districts	25	8	-	1
County Service Areas	-	13	47	35
County Water Agencies	1	1	-	-
County Water Districts	11	12	3	7
County Waterworks Districts	10			
Drainage Districts	-	1	-	-
Drainage Maintenance Districts	2			
Flood Control Districts	1	1	1	1
Irrigation Districts	2	2	1	1
Joint Exercise of Powers Agencies	2	7	1	4
Metropolitan Water Districts	1(part)	1(part)	1(part)	1(part)
Municipal Water Districts	7	3	4	3
Resource Conservation Districts	3	1	4	4
Sanitary Districts	-	7	1	-
Sewer Maintenance Districts	3	3	-	-
Stormwater Districts	-	1	-	-
Water Replenishment Districts	1	-	-	-
Water Conservation Districts	-	-	-	2
TOTAL	70	71	71	60

Source: SCAG. Overview of Local, Regional, State and Federal Agencies Impacting Regional Water Quality Management. 208-4, 1977. Corrected.

*Vector Control Districts are another type of special district with water quality-related activities. Also, two drainage maintenance districts exist in Los Angeles County.

Special districts are generally formed under general State enabling laws, which delineate their method of formation, scope of function, powers and authorities, governing board composition and financial powers. Geographical areas of special districts vary, and boundary lines of different types of districts frequently overlap and are frequently unrelated to boundaries of general purpose local governments.

The various types of special districts in the South Coast area have several features in common. Generally, they are "operational" entities designed to provide services (water supply, wastewater treatment, flood protection, solid waste disposal) or resource improvements at the local level. Most districts have powers and authorities to plan, construct, operate, and maintain necessary facilities or systems.

General governmental powers are substantially the same for all districts. These are: to have perpetual succession; to sue and be sued; to acquire real or personal property of every kind or any interest therein; to exercise the right of eminent domain; to appoint and employ necessary employees; and to enter into contracts or agreements.

Financing authorities vary among different special district types. Most districts may incur short and long-term debt, and may issue general obligation bonds or revenue bonds. Additionally, most districts are authorized to levy ad valorem taxes within set limits, based on assessed valuation of property within the district. Revenues are commonly generated through service charges and connection fees. Most districts also may accept and receive Federal and State grants and loans. It should be noted that a special district's actual use of its financial authorities may vary greatly from that which is stated under its enabling legislation.

Cities and Counties (Activities Related to Water Quality Management).

The South Coast area encompasses 122 cities within five counties. Demographic data on the cities and counties is presented in Chapter III.

Cities and counties are multifunctional governments with broad State enabling authority. With regard to water quality management, they are empowered to carry out activities in all of the following water-quality related functional areas: wastewater management, water supply, solid waste, flood control/surface runoff control, and land use. In most of these areas, cities and counties engage in planning, regulatory and operational activities. However, the emphasis is largely on operational (service-delivery) activities for all of the above functional areas,

except for land use. It is the area of land use (both its planning and regulatory aspect) that is so unique to cities and counties. Under State legislation, cities and counties are given prime responsibility for land use planning and control. While other levels of government have assumed increased roles in land use, the primary responsibility for its planning and regulation still rests with local general purpose governments.

The following list highlights land use control measures available to cities and counties which have potential for controlling sources of water pollution. The degree to which some of these tools are already utilized throughout the region varies, based on a survey conducted by the Southern California Association of Governments (Implementing Local Plans, A Survey of SCAG Region Practices, 1975).

- zoning
- flood plain zoning and regulations
- open space zoning
- hazard area/environmental management zoning
- environmental performance zoning
- subdivision regulations
- planned unit development regulations
- housing codes
- building codes
- construction permits
- development permits
- conservation/scenic easements
- hillside development regulations
- grading regulations
- soil erosion and sediment control ordinances
- septic tank ordinances
- drainage regulations
- sewer moratoria

Regional Agencies Related to Water Quality Management.

Regional agencies in the South Coast area with activities related to water quality management include the following: Los Angeles, Santa Ana, and San Diego Regional Water Quality Control Boards; South Coast Air Quality Maintenance District; and SCAG.

Regional Water Quality Control Boards. The Regional Boards have the following water quality responsibilities, pursuant to California's Porter-Cologne Water Quality Control Act:

- Formulation, adoption and update of regional water quality control plans (water basin plans) which identify beneficial uses of State waters (surface and underground), water quality standards, existing and projected wasteloads, classification and ranking of waters according to severity, effluent limitations, schedules of compliance, allowable wasteloadings, and priority lists of needs for construction of wastewater facilities.

- Issuance of waste discharge requirements for all point dischargers to navigable waters, including municipal wastewater treatment facilities and industries. Issuance of waste discharge requirements for disposal of solid and liquid wastes, and for other wastes discharged to the land. Issuance of cease and desist orders for violations of discharge requirements, and issuance of clean-up and abatement orders. Recommendation of issuance of court order or fines to the District Attorney/Attorney General for noncompliance.

- Approval or disapproval of reclamation practices and use of reclaimed water in accordance with reclamation criteria established by the State Department of Health.

- Establishment of requirements for construction, maintenance or use of any waste well extending into a subterranean water-bearing stratum used for domestic supply.

- Recommendations to the State Water Resources Control Board on priorities for funding municipal waste treatment facilities.

The Regional Water Quality Control Boards in the South Coast area are currently updating their 1975 basin plans concurrent with preparation of the 208 plan. Under formal agreement with SCAG, they are responsible for the following 208 planning responsibilities: water quality assessment and segment classifications; total maximum daily loads and point source load allocation; and, together with SCAG, municipal and industrial wasteloads and systems needs.

South Coast Air Quality Management District. The South Coast Air Quality Management District was formed in 1976 pursuant to the Lewis Air Quality Management Act (AB 250). The District has unified air pollution control responsibilities basinwide, and is governed by representatives of county and city governments. Responsibilities of predecessor local county air pollution control districts and the Southern California Air Pollution Control District were transferred to the SCAQMD, and these predecessor districts have been abolished.

The SCAQMD's major responsibility is to achieve and maintain State and Federal ambient air quality standards for the South Coast Air Basin. In order to accomplish this, the District is required to prepare and implement a comprehensive air quality management plan (AQMP) in cooperation with other public entities, including SCAG.

The SCAQMD has an indirect relationship to water quality. In preparing the air quality maintenance plan for the South Coast Area, SCAQMD is mandated to "include deadlines for compliance with the State ambient air quality standards...and...include provisions to ensure that future growth and development within the South Coast District are, to the maximum extent feasible, consistent with the goals of maintaining the air quality standards." To this extent, recommendations regarding growth and development will have implications for attainment of water quality objectives.

SCAG. The Southern California Association of Governments (SCAG) was formed in 1965 as a voluntary association of cities and counties through a Joint Powers Agreement. The basic purpose of SCAG as expressed in SCAG's bylaws, is "to provide a forum for discussion, study and development of recommendations on regional problems of mutual concern regarding orderly physical development of the Southern California Region." In carrying out this purpose, SCAG is engaged in a variety of regional planning activities.

Major Federal and State legislation and programs have enlarged the scope of SCAG's activities. As a council of governments, SCAG has been certified by the Federal Office of Management and Budget as a regional clearinghouse pursuant to the Intergovernmental Cooperation Act (Circular A-95). In this capacity, SCAG reviews: State and local projects seeking Federal assistance in designated programs; 2) Federal projects; 3) State plans; and 4) projects to be undertaken by multijurisdictional single-purpose planning agencies. SCAG also reviews certain environmental documents prepared pursuant to NEPA and CEQA, as well as plans and projects voluntarily submitted by local governments. The Federal government, at its discretion, may deny grant funds for projects which are found to be in conflict with regional and local plans and policies.

As an areawide planning organization, SCAG also is the recipient of Federal grants under HUD's 701 program for development of regional plans and policies relating to housing, water, sewer, land use, and open space. In transportation, SCAG has been designated by the State and Federal government as the regional transportation planning agency to prepare and update a Regional Transportation Plan, which was first adopted in 1975. More recently, SCAG was designated by the State as the 208 areawide waste treatment management planning agency, and as the regional air quality maintenance planning agency to participate with the South Coast Air Quality Management District in preparation of an Air Quality Maintenance Plan.

State Agencies Related to Water Quality Management

Numerous State agencies are involved in, or affect, water quality management. Water quality management activities and the major State agencies involved in these activities are listed below. The list is followed by brief profiles of selected State agencies.

WATER QUALITY MANAGEMENT ACTIVITY	STATE AGENCY
Water Quality	State Water Resources Control Board/ Regional Water Quality Control Boards Department of Water Resources Department of Health Department of Fish and Game
Wastewater Management	State Water Resources Control Board/ Regional Water Quality Control Boards Department of Health California Pollution Control Financing Authority Office of Appropriate Technology
Water Supply	Department of Water Resources State Water Resources Control Board (Division of Water Rights) Department of Health Public Utilities Commission
Flood Plain Management and Surface Runoff	Department of Water Resources
Solid Waste Management	Solid Waste Management Board Department of Health State Water Resources Control Board/Regional Water Quality Control Boards
Land Use	Office of Planning and Research California Coastal Commission

WATER QUALITY MANAGEMENT ACTIVITY	STATE AGENCY
Nonpoint Source Activities	Agricultural Extension Service (agriculture) CALTRANS (construction, urban runoff) Department of Food and Agriculture (agriculture) Division of Mines and Geology (mining) Division of Oil and Gas (oil spills) Division of Forestry (silviculture, soil erosion, sedimentation, agriculture) State Land Commission (oil spills) Division of Resource Conservation
Public Land/Resource Management	Department of Fish and Game Department of Parks and Recreation Division of Forestry State Lands Commission Wildlife Conservation Board California Coastal Commission

Air Resources Board. The ARB was created in 1967 as the State agency for air pollution control under the Mulford-Carrell Air Resources Act of 1967. The ARB's five major responsibilities are to: a) divide the State into air basins; b) promulgate primary and secondary ambient air quality standards (where Federal standards differ from State standards, the more stringent standard prevails); c) promulgate rules and regulations, including the State Implementation Plan (SIP); d) promulgate emissions standards for stationary sources to meet ambient air quality standards; and e) develop test procedures for measuring compliance with state and local emissions standards.

The ARB exerts a strong role in review and comment of environmental impact reports. As part of the State A-95 function, it reviews projects for air quality impacts, including State Clean Water Grant projects.

Largely at the urging of the ARB, the State Water Resources Control Board has adopted Clean Water Grant Program regulations that restrict State/ Federal funding of treatment plants and interceptors to capacities which do not exceed E-0 population projections in critical air areas. Applicants for projects which exceed E-0 capacities and contribute to continued violation or prevent maintenance of ambient air quality standards are required to participate in Air Quality Maintenance Planning in order to be funded.

Coastal Commission. The Coastal Commission administers the California Coastal Act of 1976. Under the Act coastal cities and counties are required to prepare local coastal programs (LCP's) which incorporate the Coastal Act policies into local plans by January 1, 1980. The LCP's will generally consist of amendments to existing local general plan elements (or a separate coastal element) and existing zoning codes with modifications or additional provisions (such as design controls, grading regulations, density and timing of development standards).

The Coastal Act of 1976 requires coastal development permits to be issued for most new development within the coastal zone. Prior to certification of LCP's, coastal permits will be issued by the regional or State commission, or from local governments with approved local permit programs. After certification of LCP's local governments are responsible for issuing coastal development permits. For certain projects, including major public facilities, the Coastal Commission (CC) will issue an additional permit. The CC has specific authority to issue coastal permits for sewage treatment facilities that provide service within the coastal zone.

California Pollution Control Financing Authority. The CPCFA was created in 1973 to assist the private sector in financing required air and water pollution control facilities. All private firms that need to comply with Federal, State or local air and water pollution control laws and regulations are eligible for assistance. Over $120 million in pollution control revenue bonds have been issued since 1973 to finance air and water pollution abatement projects in California.

Department of Fish and Game. The Department of Fish and Game, established under the California State Fish and Game Code, has the following long-range objectives: to acquire, develop, protect, maintain, enhance and manage fish and wildlife resources of the State, and to restore degraded aquatic and wildlife habitats. As administrator of the Fish and Game Code, the Department enforces criminal laws protecting fish and wildlife from water pollution. Through its monitoring efforts, the Department reports continuing and chronic pollution to appropriate regional water quality control boards. The Department also supervises and enforces State Water Resources Control Board (SWRCB) regulations on use of oil spill clean-up agents, and on an emergency basis provides for the clean-up of oil spills, acid and other hazardous pollutants. The Department investigates fish and wildlife losses throughou the State, and formulates recommendations to the SWRCB for changes in waste discharge requirements that may abate or prevent further losses.

Department of Health. The Department of Health has statutory responsibility for public health aspects of water supply, wastewater disposal and reuse, hazardous waste handling, processing and disposal, protection of recreational waters, and protection of shellfish harvesting areas. In addition, Department authority extends to regulation of solid waste disposal, regulation of toxic substances, and health effects of radioactive substances. For most of its activities, the Department cooperates and coordinates with local health departments.

Department of Water Resources. The overall purpose of DWR is to provide comprehensive planning, development, control, conservation and use of the State's water resources. The DWR is advised by the California Water Commission, which is responsible for approving DWR rules and regulations. Activities of the DWR include: development of the California Water Plan; construction and operation of the California State Water Project; investigation of wastewater reclamation; and investigations and monitoring of surface and groundwater.

Office of Appropriate Technology. The recently-created Governor's Office of Appropriate Technology is currently investigating technical alternatives to centralized sewer systems, including individual onsite wastewater disposal systems. In addition, it is exploring institutional methods for providing public management of private on-site wastewater systems.

Office of Planning and Research. The legislative intent expressed in establishing OPR in 1970 was that the State's future growth should proceed within the framework of offically approved Statewide goals and policies on land use, population growth and distribution, urban expansion, environmental quality and other relevant physical, social and economic development factors. These goals and policies are embodied in OPR's Environmental Goals and Policies Report, published in 1973. The report has been updated by the OPR's draft Urban Development Strategy for California.

Solid Waste Management Board. The Solid Waste Management Board was created in 1972 under the Solid Waste Management and Resources Recovery Act of 1972 to develop a State policy for solid waste management and a State Solid Waste Resource Recovery Program. To fullfill that legislative intent, counties were mandated to prepare solid waste management plans, in cooperation with affected local jurisdictions, that would be consistent with the State Policy as well as regional plans. Other significant activities of the SWRCB are the promulgation of the State Policy for Solid Waste Management, including minimum standards for solid waste handling and disposal; the State Solid Waste Resource Recovery Program, which sets as a goal 25% reduction of solid waste to sanitary landfills through resource recovery; an interagency investigation of hazardous waste generation, monitoring and disposal; and technical assistance programs and research activities.

State Water Resources Control Board. The State Water Resources Control Board was established in 1967. The Board is divided into two statutory divisions: Water Rights and Water Quality, each with a division chief. In addition, a Legal Division and Divisions of Planning and Research and Administrative Services have been established.

The Board succeeded to the functions of the former State Water Rights Board and the State Water Quality Control Board, which were abolished. The formation of the Board resulted in the coordination of the water rights, water pollution, and water quality functions of the state government. Water pollution and water quality are now taken into account in conjunction with availability of unappropriated water whenever applications for appropriation of water are considered.

The Board has certain responsibilities pursuant to PL 92-500, and has additional responsibilities pursuant to the Porter-Cologne Act. Pursuant to PL 92-500, the SWRCB has many responsibilities, including the following:

- Develops water quality standards and beneficial uses;
- Develops effluent limitations for all point sources (municipal and otherwise) discharging into navigable waters;
- Establishes and implements a permit system for regulating and enforcing effluent limitations for point sources;
- Develops and implements a "continuing water quality planning process;"
- Administers the 75% share of Federal grants for treatment plants; and
- Designates (through the Governor) "208" areas and agencies to develop areawide treatment programs.

Under the Porter-Cologne Act and other State water quality legislation, the SWRCB has the following responsibilities in addition to those listed above:

- Sets Statewide water quality policies and priorities;
- Administers the Clean Water Grant Program (12-1/2% State contribution to FWPCAA construction grants for municipal treatment facilities). Funds are derived from the sale of electorate approved general obligation bonds, authorized in 1970 and 1974.
- Oversees and adopts basin plans prepared by Regional Water Quality Control Boards and oversees activities of the Regional Boards;
- Regulates hauling and disposal of liquid waste;
- Approves disposal sites, restricts discharges into certain drainage systems, prescribes conditions for discharge into community sewer systems;
- Regulates disposal of solid wastes, offshore dumping and dredge spoil disposal;
- Conducts and coordinates water quality related research studies;
- Reviews water project plans prepared by other State agencies;
- Operates a water quality data system, which includes data on discharger descriptions, permit requirements, surveillance and enforcement.
- Provides for assessment of fines.

The SWRCB has a separate Division of Water Rights, which determines water rights and administers appropriation of surplus State waters through an application-permit-license system. The SWRCB acts upon appropriations in accordance with its water quality program. In addition, it conducts adjudication proceedings on surface and groundwaters, and may take judicial actions to restrict pumping of groundwater where groundwater quality is threatened with impairment.

Federal Agencies Related to Water Quality Management

Several Federal agencies are involved in, or affect, water quality management. Water quality management activities and the major Federal agencies involved in these activities are listed below. The list is followed by brief profiles of selected Federal agencies.

WATER QUALITY MANAGEMENT ACTIVITY	FEDERAL AGENCY
Water Quality	Environmental Protection Agency
Wastewater Management	Environmental Protection Agency Economic Development Administration Department of Housing and Urban Development Farmers Home Administration (Department of Agriculture) Small Business Administration U. S. Coast Guard
Water Supply	Environmental Protection Agency U. S. Army Corps of Engineers (Department of Army) Bureau of Reclamation (Department of Interior) Farmers Home Administration (Department of Agriculture) U. S. Geological Survey (Department of Interior) Water Resources Council
Flood Plain Management and Surface Runoff	U. S. Army Corps of Engineers (Department of Army) Bureau of Reclamation (Department of Interior) Department of Housing and Urban Development Farmers Home Administration (Department of Agriculture) Soil Conservation Service (Department of Agriculture)
Solid Waste Management	Environmental Protection Agency
Land Use	Department of Housing and Urban Development National Oceanographic and Atmospheric Administration (Department of Commerce)

WATER QUALITY MANAGEMENT ACTIVITY	FEDERAL AGENCY
Nonpoint Source Activities	Environmental Protection Agency Agricultural Stabilization and Conservation Service (Department of Agriculture) Bureau of Reclamation (Department of Interior) U. S. Army Corps of Engineers Department of Housing and Urban Development Farmers Home Administration (Department of Agriculture) Federal Highway Administration (Department of Transportation) Small Business Administration Soil Conservation Service (Department of Agriculture) U. S. Forest Service (Department of Agriculture) U. S. Fish and Wildlife Service (Department of Interior)
Public Land/Resource Management	U. S. Army Corps of Engineers (Department of Army) Bureau of Land Management (Department of Interior) Bureau of Reclamation (Department of Interior) U. S. Forest Service (Department of Agriculture)

U. S. Army Corps of Engineers (Department of Army). As the principal water resources development agency of the Federal government, the Corps of Engineers is responsible for: development and protection of major coastal harbors; limited regulation of navigable and intertidal waters through "404" permits issued for dredged and fill materials; planning, construction and operation of major dams, reservoirs, channels and harbors; erosion control; and numerous technical assistance programs.

Bureau of Land Management (Department of Interior). The BLM administers and manages Federally-owned natural resource lands. Major activities on BLM lands include: onshore and offshore energy and minerals management; provision of recreational facilities; lands and reality management; and land use planning.

Bureau of Reclamation (Department of Interior). The Bureau of Reclamation is responsible for construction, operation and maintenance of large-scale Federal water reclamation projects for multi-purpose uses, including irrigation, municipal/industrial water supplies, hydroelectric power, flood control, river regulation, water quality control, recreation, and fish and wildlife enhancement. The Bureau's other responsibilities include investigation and development of plans for regulation, conservation and utilization of water and related resources, including basin water studies, new fresh water supplies, power capacity, and energy.

Department of Housing and Urban Development. HUD administers the Community Development Program, the Flood Insurance Program and the Comprehensive Planning Assistance Program, which are grant, loan and technical assistance programs, respectively.

Environmental Protection Agency. EPA has broad environmental management responsibilities aimed at controlling pollution in the following resource areas: water quality, air quality, drinking water supply, pesticides, solid wastes and toxic substances. EPA is primarily a regulatory agency with the following support functions: planning, research and development, standard setting, monitoring, enforcement, technical assistance and financial assistance. The major Federal environmental laws which EPA administers are the Federal Water Pollution Control Act of 1972 (PL 92-500), the Clean Air Act, the Safe Drinking Water Act of 1974, the Resource Conservation and Recovery Act, and the Toxic Substances Control Act.

U. S. Geological Survey (Department of Interior). The U. S. Geological Survey performs surveys, investigations and research covering topography, geology, mineral and water resources; classifies land as to mineral, water and power resources; and publishes and disseminates data relative to the foregoing activities.

National Oceanographic and Atmospheric Administration (Department of Commerce). NOAA conducts research activities relating to weather forecasting, oceanography, marine protection, and coastal protection. It also administers the Coastal Zone Management Act of 1972 and the Marine Research, Protection and Sanctuaries Act of 1972.

Soil Conservation Service (Department of Agriculture). The Soil Conservation Service provides extensive technical assistance programs, cooperative programs and cost-sharing programs directed toward soil conservation, sediment control planning, land conservation and use, agricultural pollution control, watershed protection and flood prevention.

U.S. Fish and Wildlife Service (Department of Interior). The principal function of the Service is to enforce Federal wildlife statutes. Major activities include research, protection and improvement of land and water environments for habitat preservation; area planning for river basins and wilderness areas; and wildlife refuge and hatcheries management.

Water Resources Council. Statutory members of the Council are the Secretaries of Interior, Agriculture, Army, Commerce, Housing and Urban Development, Transportation; the Administrator of EPA; and the Chairman of the Federal Power Commission. At the directive of the President, the Water Resources Council, the Council on Environmental Quality (CEQ), and the Office of Management and Budget (OMB) are currently reviewing existing national water resource policy and recommending reforms. Included in the study are the following issues: 1) revision of water resources planning and evaluation criteria and procedures; 2) increased cost-sharing among non-Federal entities; 3) institutional arrangements; 4) quantification of Indian water rights and Federal reserve water rights; and 5) increased water conservation.

General Conclusions on the Institutional Framework

The previous discussion has provided only brief profiles of some of the numerous agencies involved in water quality management in the South Coast area. Some general conclusions from this discussion are presented below:

- The South Coast Area has an extremely complex institutional framework for water quality management, perhaps one of the most complex in the nation. It consists of interactions between numerous Federal, State, regional and local agencies. Local agencies are represented by over 120 cities, 5 counties, and over 250 water quality related special districts.

- Given the diffusion of water quality management activities among the hundreds of agencies on several levels of government, the institutional framework for water quality management in the South Coast area is fragmented. Fragmentation, in and of itself, is not necessarily a flaw in the institutional framework, as long as water quality responsibilities are sufficiently coordinated between agencies and directed toward consistent goals and objectives. This is not always the case, however.

- The institutional structure for wastewater treatment is centralized in Orange and Los Angeles Counties among three large sanitation entities: the City of Los Angeles, the Los Angeles County Sanitation Districts, and the County Sanitation Districts of Orange County. Wastewater treatment responsibility in the less urbanized counties of Riverside and San Bernardino is spread among several smaller districts and general purpose governments.

- The focus of water quality management generally has been on the control of point sources of pollution. More recently, there has been a growing awareness of the significance of nonpoint source pollution. There is currently no overall regional management system for control of nonpoint source pollution.

- Responsibility for nonpoint source pollution control is diffused among numerous local, regional, State and Federal agencies.

- Water quality management is only part of water resources management, which in turn is only one part of integrated environmental management. Water supply, water quality control, and flood control are interdependent activities. The functioning of these management activities should be based on consistent objectives to assure integration.

Footnotes to Chapter II

1 SCAG has produced two reports which describe in detail the policy and institutional framework for 208 planning. These are:

- Federal, State, and Regional Environmental Policy: A Policy Framework for Areawide Water Quality Management Planning. 208-2, 1977.

- Overview of Local, Regional, State, and Federal Agencies Impacting Regional Water Quality Management. 208-4, 1977.

CHAPTER III

POPULATION, HOUSING, EMPLOYMENT, AND LAND USE

Introduction

Demographic forecasts are essential prerequisites for waste treatment management and water quality control planning. This chapter presents the baseline (working) forecast for 208 planning and examines forecasts prepared by other agencies. The following topics are reviewed in this chapter: the baseline forecast for the six-county SCAG region; the baseline forecast for the South Coast 208 planning area; methods and assumptions underlying the baseline forecast; the range of forecasts prepared by other local agencies; and a comparison and preliminary assessment of different growth forecasts.

Baseline Forecast: SCAG Region

The SCAG region encompasses Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial counties. In 1975, about 10,486,000 people lived in the SCAG region. Most of the population resides in Los Angeles County (7,021,000, or about 67%), with the remainder in Orange County (1,721,000, or about 16%), San Bernardino County (696,000, or about 7%), Riverside County (532,000 or about 5%), Ventura County (432,000, or about 4%) and Imperial County (83,000, or about 1%).

Baseline forecasts[1] for population, housing, and employment in the SCAG region are contained in Tables III-1, III-2, and III-3, respectively, and are illustrated in Figure III-1. The forecasts are presented for each county, and within each county, for SCAG Regional Statistical Areas (RSA's). Each RSA is composed of census tracts or county planning districts. The location of RSA's in the SCAG region is shown in Figure III-2.

The baseline population forecast for the year 2000 (Table III-1), Figure III-1) indicates that the total population of the SCAG region will increase to 13,295,000, an increase of about 27% over 1975. Los Angeles County population is forecast to increase to 7,905,000 (a 13% increase), Orange County population is forecast to increase to 2,656,000 (a 54% increase), San Bernardino County population is forecast to increase to 960,000 (a 38% increase), Riverside County population is forecast to increase to 866,000 (a 63% increase), and Ventura County is forecast to increase to 116,000 (a 40% increase). In relative terms, then, the fastest growing counties are forecast to be Ventura, Orange and Riverside, with Los Angeles County showing the slowest growth.

TABLE III-1

BASELINE (MODIFIED SCAG-76) POPULATION FORECASTS

RSA #	COUNTY/RSA	YEAR 1975	1980	1985	1990	1995	2000	RSA#
	VENTURA							
1	LOSPADS	347	400	400	400	500	500	1
2	VENTURA	115,854	124,000	132,000	140,000	155,000	175,000	2
3	OXNARD	155,400	181,000	207,000	233,000	258,000	292,000	3
4	SIMI	77,291	87,900	97,950	108,000	120,000	136,000	4
5	THSOAKS	72,602	97,500	116,750	136,000	150,000	170,000	5
6	FILLMOR	10,913	12,200	13,400	14,600	16,500	18,500	6
	COUNTY TOTAL	432,407	503,000	567,500	632,000	700,000	792,000	
	LOS ANGELES							
7	CALABAS	27,898	35,000	39,000	43,000	47,500	52,000	7
8	NEWHALL	60,035	70,000	76,500	83,000	90,000	97,000	8
9	LANCAST	55,762	68,000	82,000	96,000	114,500	135,000	9
10	PALMDAL	33,541	37,000	45,500	54,000	68,000	82,000	10
11	S G MTS	1,806	1,900	1,950	2,000	2,000	2,000	11
12	SW SFV	564,005	588,000	612,500	637,000	656,000	675,000	12
13	BURBANK	256,791	259,000	264,000	269,000	275,000	281,000	13
14	NE SFV	269,745	274,000	277,000	280,000	283,000	286,000	14
15	MALIBU	15,478	19,000	21,000	23,000	25,000	27,000	15
16	SMONICA	313,121	324,000	331,500	339,000	344,500	350,000	16
17	WCENTRL	908,068	917,000	933,500	950,000	963,500	977,000	17
18	SO BAY	515,515	520,000	528,500	537,000	547,000	557,000	18
19	PALVRDS	429,159	442,000	451,500	461,000	469,000	477,000	19
20	LBEACH	415,387	424,000	436,000	448,000	457,000	462,000	20
21	ECENTRAL	774,927	778,000	789,000	800,000	809,000	818,000	21
22	NOR-WHI	615,645	634,000	646,000	658,000	669,000	680,000	22
23	LA CBD	83,102	86,000	94,500	103,000	110,000	117,000	23
24	GLENDAL	404,766	408,000	414,500	421,000	428,000	435,000	24
25	WSANGAB	655,161	658,000	663,500	669,000	676,500	684,000	25
26	ESANGAB	470,628	486,000	500,500	515,000	525,000	535,000	26
27	POMONA	150,232	157,000	163,000	169,000	172,500	176,000	27
	COUNTY TOTAL	7,020,772	7,185,900	7,371,450	7,557,000	7,732,000	7,905,000	
	SAN BERNARDINO							
28	WESTEND	251,316	296,000	325,000	354,000	376,000	398,000	28
29	EASTEND	299,019	312,000	325,500	339,000	355,000	372,000	29
30	SB MTS	23,693	26,100	28,050	30,000	31,500	33,000	30
31	BAKER	6,696	7,000	7,250	7,500	7,800	8,000	31
32	BARSTOW	81,502	86,400	91,200	96,000	100,000	104,000	32
33	TWPALMS	27,931	29,400	31,450	33,500	35,500	37,500	33
34	NEEDLES	5,907	6,300	6,650	7,000	7,200	7,500	34
	COUNTY TOTAL	696,064	763,200	815,100	867,000	913,000	960,000	
	ORANGE **							
35	J-BUPK	153,209*	162,000	171,500	181,000	185,000	189,000	35
36	A-FULTN	157,494*	167,000	179,000	191,000	198,000	206,000	36
37	H-ANAHM	325,232*	338,000	357,500	377,000	389,000	400,000	37
38	I-W CST	296,823*	324,000	341,500	359,000	382,000	404,000	38
39	F-C CST	161,080*	203,000	240,000	277,000	297,000	317,000	39
40	D-S CST	106,764*	135,000	151,500	168,000	184,000	201,000	40
41	B-CANYN	89,222*	104,000	124,500	145,000	162,000	179,000	41
42	G-S ANA	343,427*	379,000	407,000	435,000	453,000	470,000	42
43	C-TRABU	58,182*	94,000	111,000	128,000	136,000	145,000	43
44	E-TORO	30,661*	56,000	82,000	108,000	127,000	145,000	44
	COUNTY TOTAL	1,722,094*	1,962,000	2,165,500	2,369,000	2,513,000	2,656,000	
	RIVERSIDE							
45	JURUPA	40,251	44,000	47,500	51,000	54,500	58,000	45
46	RVRSIDE	250,237	281,000	312,000	343,000	379,000	416,000	46
47	PERRIS	28,300	32,500	35,250	38,000	41,800	45,600	47
48	HEMET	44,541	52,000	59,000	66,000	71,000	76,000	48
49	MURRIET	12,048	14,100	15,800	17,500	18,800	20,200	49
50	BANNING	27,999	30,000	32,000	34,000	35,900	37,800	50
51	IDYWILD	3,903	4,500	5,000	5,500	6,100	6,800	51
52	PALM SP	65,903	80,000	90,000	100,000	112,000	123,000	52
53	COACHEL	41,969	45,700	49,850	54,000	58,100	62,100	53
54	CHUCKWA	16,528	17,300	18,150	19,000	19,800	20,500	54
	COUNTY TOTAL	531,679	601,100	664,550	728,000	797,000	866,000	
	IMPERIAL							
55	IMPERL	83,250	90,000	96,000	102,000	109,000	116,000	55
	COUNTY TOTAL	83,250	90,000	96,000	102,000	109,000	116,000	
	REGION TOTAL	10,486,266	11,105,200	11,680,100	12,255,000	12,764,000	13,295,000	

* 1976 ORANGE COUNTY SPECIAL CENSUS
** NEW RSA BOUNDARIES

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	1995	2000	RSA#
	[illegible]							
	LOSPADRS	343	400	400	400	500	500	1
	VENTURA	44,358	48,000	51,700	55,300	60,500	67,600	2
3	OXNARD	51,362	60,900	71,100	81,200	89,100	100,000	3
4	SIMI	21,163	24,700	28,400	32,000	35,800	40,800	4
5	THSOAKS	23,383	31,700	38,300	44,900	48,700	54,300	5
6	FILLMOR	[illegible]	4,000	4,500	5,000	5,600	6,200	6
	COUNTY TOTAL	[illegible]	[illegible]	[illegible]	[illegible]	240,200	269,400	
	LOS ANGELES							
7	CALABAS	9,937	12,500	14,100	15,600	17,100	18,600	7
8	NEWHALL	18,188	21,600	24,200	26,800	28,900	31,100	8
9	LANCAST	21,828	26,100	30,900	35,600	42,200	49,500	9
10	PALMDAL	12,145	13,500	16,700	19,900	25,000	29,900	10
11	S G MTS	969	1,000	1,100	1,100	1,100	1,100	11
12	SW SFV	206,610	219,100	232,500	245,900	252,300	258,600	12
13	BURBANK	110,519	113,500	117,900	122,300	124,400	126,600	13
14	NE SFV	79,842	82,400	84,700	87,000	87,900	88,800	14
15	MALIBU	6,065	7,600	8,600	9,500	10,200	11,000	15
16	SMONICA	142,730	150,100	156,200	162,200	163,700	165,100	16
17	WCENTRL	442,033	453,300	469,000	484,700	486,600	488,500	17
18	SO BAY	206,744	213,500	222,500	231,500	233,800	236,000	18
19	PALVRDS	140,060	146,900	153,000	159,000	161,200	163,400	19
20	LBEACH	180,689	187,900	197,200	206,500	209,600	211,000	20
21	ECENTRAL	272,296	274,900	280,300	285,700	288,400	291,100	21
22	NOR-WHI	198,224	208,700	217,800	226,900	229,900	232,900	22
23	LA CBD	48,377	50,200	55,400	60,600	64,100	67,600	23
24	GLENDAL	165,170	169,500	175,500	181,500	183,300	185,100	24
25	WSANGAB	248,384	254,200	261,500	268,700	270,600	272,500	25
26	ESANGAB	134,300	141,800	149,700	157,500	160,600	163,600	26
27	POMONA	50,287	53,200	56,000	58,700	59,700	60,700	27
	COUNTY TOTAL	2,695,397	2,801,500	2,924,800	3,047,200	3,100,600	3,152,700	
	SAN BERNARDINO							
28	WESTEND	85,505	101,000	111,300	121,600	128,800	135,800	28
29	EASTEND	114,562	119,800	125,400	130,900	135,800	140,900	29
30	SB MTS	30,955	34,000	36,500	39,000	40,600	42,300	30
31	BAKER	2,707	2,900	3,000	3,100	3,200	3,300	31
32	BARSTOW	31,697	34,000	36,500	38,900	40,300	41,800	32
33	TWPALMS	17,807	18,900	20,500	22,000	23,200	24,400	33
34	NEEDLES	2,596	2,800	3,000	3,200	3,300	3,400	34
	COUNTY TOTAL	285,829	313,400	336,200	358,700	375,200	391,900	
	ORANGE **							
35	J-BUPK	48,067*	51,700	55,500	59,300	60,600	62,000	35
36	A-FULTN	57,105*	62,000	67,800	73,700	76,400	79,600	36
37	H-ANAHM	116,395*	122,500	131,700	140,800	145,000	149,100	37
38	I-W CST	104,848*	119,800	130,200	140,500	149,200	158,100	38
39	F-C CST	67,820*	86,800	101,600	116,400	124,500	130,800	39
40	D-S CST	53,181*	66,000	70,100	74,300	81,200	87,800	40
41	B-CANYN	28,708*	34,500	42,200	49,900	55,300	60,900	41
42	G-S ANA	120,040*	135,400	147,400	159,300	165,600	171,800	42
43	C-TRABU	18,920*	32,400	38,200	44,000	46,600	49,500	43
44	E-TORO	7,947*	16,600	27,400	38,000	44,000	50,000	44
	COUNTY TOTAL	623,031*	727,700	812,100	896,200	948,400	999,600	
	RIVERSIDE							
45	JURUPA	13,946	15,600	17,200	18,800	20,000	21,200	45
46	RVRSIDE	83,022	94,200	105,900	117,500	129,100	141,000	46
47	PERRIS	13,721	16,000	17,800	19,500	21,200	22,800	47
48	HEMET	20,102	23,700	27,200	30,600	32,600	34,700	48
49	MURRIET	8,153	9,700	11,000	12,300	13,200	14,200	49
50	BANNING	11,609	12,700	13,900	15,000	15,700	16,400	50
51	IDYWILD	4,144	4,800	5,400	5,900	6,400	7,000	51
52	PALM SP	40,870	50,100	56,900	63,700	71,100	77,800	52
53	COACHEL	13,329	14,800	16,500	18,200	19,600	20,800	53
54	CHUCKWA	5,993	6,400	6,800	7,200	7,400	7,600	54
	COUNTY TOTAL	214,889	248,000	278,600	308,700	336,300	363,500	
	IMPERIAL							
55	IMPERL	26,256	28,700	31,000	33,200	35,300	37,300	55
	COUNTY TOTAL	26,256	28,700	31,000	33,200	35,300	37,300	
	REGION TOTAL	3,989,510	4,289,000	4,577,100	4,862,800	5,036,000	5,214,400	

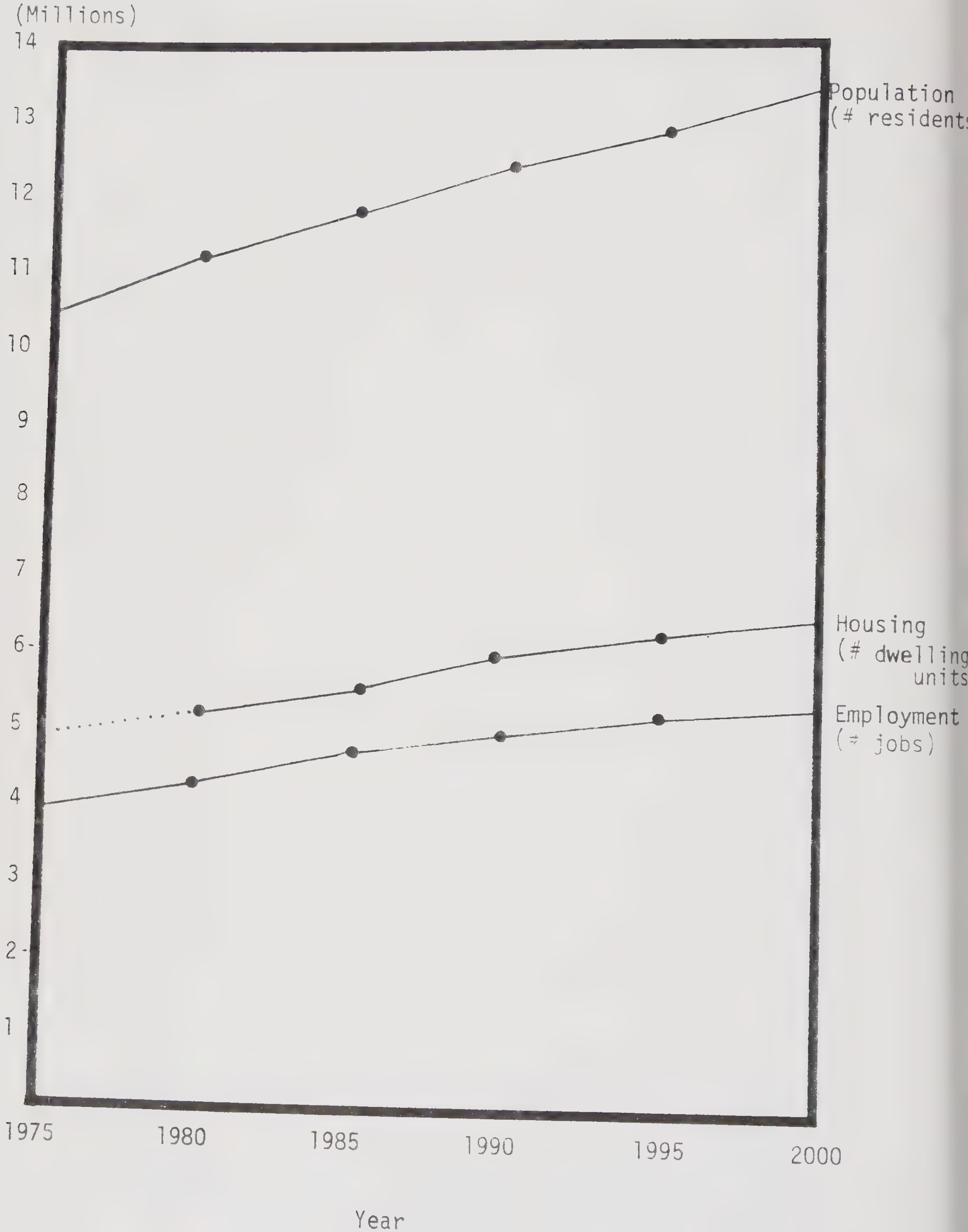
* 1976 ORANGE COUNTY SPECIAL CENSUS
** [illegible]

RSA#	COUNTY/[illegible]							
	VENTURA	1970						
1	LOSPADS	100	100	100	100	100	100	1
2	VENTURA	37,700	44,000	49,500	55,000	62,200	69,400	2
3	OXNARD	52,100	84,000	95,000	105,900	119,500	133,000	3
4	SIMI	9,100	16,200	18,600	21,000	24,800	28,500	4
5	THSOAKS	13,900	21,500	25,800	30,000	34,900	39,700	5
6	FILLMOR	3,000	4,200	4,600	5,000	5,700	[illegible]	6
	COUNTY TOTAL	115,800	170,000	193,600	217,000	247,200	277,000	
	LOS ANGELES	1973						
7	CALABAS	6,700	15,100	20,100	25,000	27,500	30,000	7
8	NEWHALL	6,000	17,800	21,400	25,000	29,500	34,000	8
9	LANCAST	17,200	27,900	34,300	40,500	51,100	61,600	9
10	PALMDAL	20,000	22,100	27,600	33,000	40,000	47,000	10
11	S G MTS	300	400	400	400	400	400	11
12	SW SFV	[illegible]	273,300	300,200	32[illegible],000	342,000	357,000	12
13	BURBANK	150,400	159,300	165,700	172,000	175,500	179,000	13
14	NE SFV	50,000	57,400	62,700	68,000	70,500	73,000	14
15	MALIBU	4,000	6,000	7,000	8,000	8,500	9,000	15
16	SMONICA	130,400	144,100	152,100	160,000	165,000	170,000	16
17	WCENTRL	518,000	543,700	557,900	572,000	581,500	591,000	17
18	SO BAY	277,400	290,400	297,700	305,000	312,000	319,000	18
19	PALVRDS	190,500	207,000	216,500	226,000	232,000	238,000	19
20	LBEACH	170,500	181,900	188,500	195,000	200,000	205,000	20
21	ECENTRAL	518,000	522,800	526,400	530,000	532,500	535,000	21
22	NOR-WHI	213,900	229,400	238,700	248,000	254,000	260,000	22
23	LA CBD	254,000	265,400	271,700	278,000	284,000	290,000	23
24	GLENDAL	153,800	159,600	163,300	167,000	170,500	174,000	24
25	WSANGAB	264,000	273,900	279,500	285,000	288,500	292,000	25
26	ESANGAB	120,000	140,900	154,000	167,000	174,500	182,000	26
27	POMONA	53,300	58,[illegible]	62,300	65,000	68,500	71,000	27
	COUNTY TOTAL	3,342,500	3,[illegible]	3,748,000	3,898,000	4,008,000	4,118,000	
	SAN BERNARDINO	1970						
28	WESTEND	70,300	99,100	116,500	133,900	148,700	163,500	28
29	EASTEND	98,700	107,500	118,200	128,800	140,000	151,100	29
30	SB MTS	5,700	7,500	8,300	9,100	9,900	10,600	30
31	BAKER	4,200	4,200	4,400	4,500	4,700	4,900	31
32	BARSTOW	28,700	31,700	34,000	36,300	38,500	40,700	32
33	TWPALMS	9,300	11,300	12,300	13,300	13,900	14,500	33
34	NEEDLES	2,500	2,700	2,900	3,100	3,400	3,700	34
	COUNTY TOTAL	219,400	264,000	296,600	329,000	359,100	389,000	
	ORANGE COUNTY (1)	1974						
35	J-BURK	36,100	46,000	53,000	60,000	65,000	70,000	35
36	A-FULTN	86,500	114,000	128,500	143,000	149,000	155,000	36
37	H-ANAHM	109,000	127,000	138,500	150,000	168,500	187,000	37
38	I-W CST	61,700	80,000	93,500	107,000	120,500	134,000	38
39	F-C CST	93,500	132,000	148,500	165,000	178,500	192,000	39
40	D-S CST	20,500	30,000	40,000	50,000	56,500	63,000	40
41	B-CANYN	31,100	41,000	54,500	68,000	74,000	80,000	41
42	G-S ANA	151,000	191,000	218,500	246,000	262,000	278,000	42
43	C-TRABU	7,000	13,000	19,000	25,000	32,000	39,000	43
44	E-TORO	25,500	52,000	70,000	88,000	95,000	102,000	44
	COUNTY TOTAL	621,900	826,000	964,000	1,102,000	1,201,000	1,300,000	
	RIVERSIDE	1970						
45	JURUPA	7,100	9,200	11,100	13,000	14,600	16,200	45
46	RVRSIDE	77,700	99,000	115,000	131,000	148,300	165,600	46
47	PERRIS	7,500	9,700	10,900	12,000	13,400	14,700	47
48	HEMET	9,300	14,000	16,000	18,000	19,500	20,900	48
49	MURRIET	2,900	3,700	4,600	5,500	6,200	6,800	49
50	BANNING	5,900	7,300	8,400	9,400	10,300	11,200	50
51	IDYWILD	800	1,200	1,400	1,600	1,900	2,200	51
52	PALM SP	16,300	26,900	31,500	36,000	40,900	45,700	52
53	COACHEL	14,600	17,400	19,200	21,000	22,800	24,500	53
54	CHUCKWA	7,000	7,600	8,1[illegible]	8,500	8,900	9,200	54
	COUNTY TOTAL	149,100	196,000	226,200	256,000	286,800	317,000	
	IMPERIAL	1974						
55	IMPERL	40,000	44,000	46,000	48,000	50,000	52,000	55
	COUNTY TOTAL	40,000	44,000	[illegible]	[illegible]	50,000	[illegible]	
	REGION TOTAL		5,097,000	[illegible],474,400	[illegible]	6,152,100	6,453,000	

(1) NEW [illegible]

FIGURE III-1

BASELINE POPULATION/HOUSING/EMPLOYMENT FORECASTS, SIX-COUNTY SCAG REGION (TOTAL)



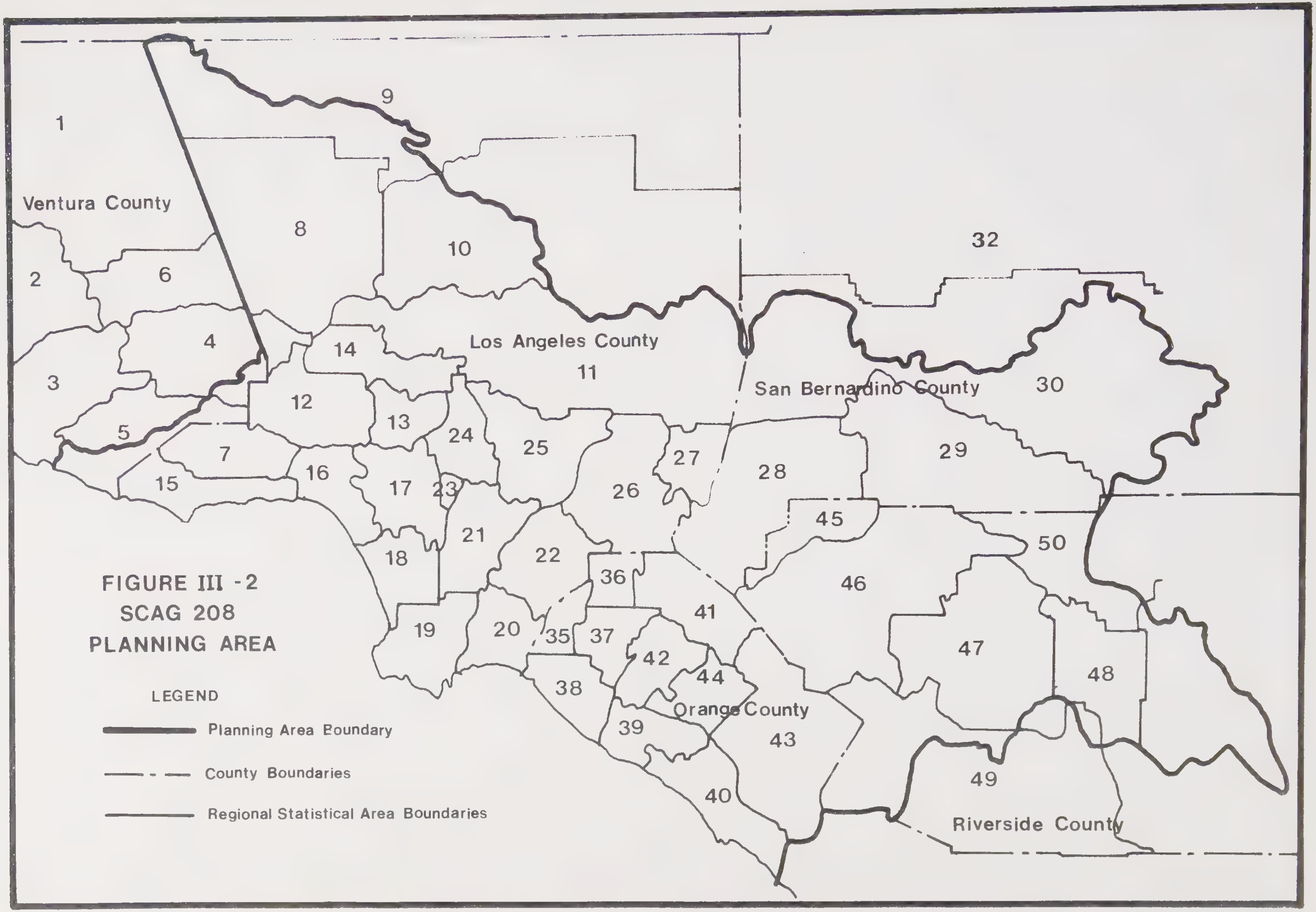


FIGURE III -2
SCAG 208
PLANNING AREA

Baseline Forecast: South Coast 208 Area

As shown in Figure III-2, the South Coast 208 planning area is smaller than the six-county SCAG region; it includes all of Orange County, the metropolitan portions of Los Angeles, San Bernardino, and Riverside Counties, and a small portion of Southern Ventura County. Although the South Coast planning area has about one-sixth the total acreage of the SCAG region, in 1975 it contained about 92% of the population of the SCAG region, or about 9,619,000 people.

Baseline population and land use forecasts for the South Coast planning area are summarized in Table III-4. The planning area is forecast to increase from 9,619,000 people in 1975 to 11,798,000 people in the year 2000, a 23% increase. County planning area trends are similar to those reviewed in the above discussion of the baseline forecast for the SCAG region. In terms of land use, Orange County is forecast to show the largest relative increase in urban acreage, from 170,000 urban acres in 1973 to 240,000 acres in the year 2000 (a 41% increase). The Los Angeles/Ventura County portion of the South Coast area, on the other hand, shows the least relative increase in urban acres, from 629,000 in 1975 to 655,000 in the year 2000 (a 4% increase).

Methods and Assumptions for the Baseline Forecast

The baseline demographic forecast is essentially a modification of the "SCAG-76" growth forecast policy to reflect more recent data. Thus, the baseline forecast is called "SCAG-76M".

The SCAG-76 Forecast.

The SCAG-76 Growth Forecast Policy[2], adopted by the Executive Committee in December 1975, is a quantitative forecast guide used to direct growth in the SCAG region. The SCAG-76 forecast expresses local and regional policies through explicit population, housing, employment and land use numbers. The forecast numbers represent a preferred magnitude, timing, and distribution of expected growth. The numbers take into account historic trends (with which they may differ or coincide, depending on policy), and the assumptions and projections of numerous forecasters, planners, demographers and institutions in the region.

The following assumptions are reflected in the forecast:

- A fertility rate of 2.5 live births per woman and a net yearly migration of 100,000 into the State.

- An average household size of 2.59 by 1990.

TABLE III-4

SUMMARY OF BASELINE POPULATION AND LAND USE FORECASTS FOR THE SOUTH COAST 208 PLANNING AREA

Population

County Planning Area	1975	2000	% Increase
Los Angeles/Ventura	6,946,000	7,726,000	11.2
Orange	1,722,000	2,656,000	54.2
Riverside	389,000	634,000	63.0
San Bernardino	559,000	782,000	39.9
TOTAL	9,619,000	11,798,000	22.7

Land Use (Urban Acres)[a]

County Planning Area	Base Year	2000	% Increase
Los Angeles/Ventura	629,000(1975)	655,450	4.3
Orange	170,000(1973)	240,000	41.2
Riverside	99,000(1975)	123,000	24.2
San Bernardino	101,000(1974)	122,000	19.8

Source: SCAG. Regional Population, Housing, Employment, and Land Use Forecasts; Baseline and Range, 208-5, Volume I, Table S-1, as corrected in Errata Sheet to report.

[a]Sum of residential, commercial, industrial, transportation/utilities, and institutional uses.

- A more balanced transportation system and improvements in air quality.

- Energy will increase in price and there will be problems of availability. An adequate supply of water will exist to accommodate forecast growth.

Policies built into the SCAG-76 Forecast are:

- Encourage growth in and adjacent to existing urban areas.

- Avoid excessive housing recycle and resulting community disruption. Avoid densities that would overtax the existing and currently planned infrastructure.

- Balance population with jobs within each major subregion.

- Carefully manage fringe area growth and preserve the region's natural resources, particularly prime agricultural lands.

Modifications of SCAG-76 to Produce the Baseline Forecast

The SCAG-76 forecast was reviewed for RSA's in which observed development differed markedly from SCAG-76 near-term estimates. The following modifications were made to the SCAG-76 forecast:

Population:

- Orange County RSA's were adjusted to reflect new RSA boundaries.

- RSA's 9 & 10 decreased by 5,000 each due primarily to an expected delay in the expansion of Palmdale Airport.

- RSA 17 decreased by 10,000 due to revised assumptions on household size.

- RSA's 26 27, and 28 increased by 15,000, 5,000, and 20,000 respectively due to unexpected high growth pressures in these areas.

- RSA 29 decreased by 20,000 due to an expected drop in household size and to relative lack of strong growth pressure.

Housing:

- Orange County RSA's were adjusted to reflect new RSA boundaries.

- Household size was dropped from a regional 1995 average of 2.59 persons per dwelling unit to 2.52 in the baseline forecast.

Employment:

- Orange County RSA's were adjusted to reflect new RSA boundaries.

- The SCAG-76 forecast was adjusted for increased labor participation rates and for a higher jobs-per-employed-person ratio.

- New base year employment data was incorporated fo Los Angeles County (ICE file) and Orange County (INCOM file).

Land Use:

- New base year data (1973-1975) was incorporated for all counties.

- Nine land use categories were forecast in the baseline, as opposed to five land use categories in SCAG-76.

- Increased urban uses appear in the baseline due to increased housing forecasts.

Range of Forecasts Prepared by Other Local Agencies

Almost every general and special purpose government in Southern California engages in forecasting. Local governments which prepare population, housing, employment, and land use forecasts are listed in Table III-5[3]. Special purpose agencies which prepare these forecasts are listed in Table III-6 [4]. As may be inferred, literally hundreds of independent demographic forecasts exist. Generally, each is prepared using different base years, different methods and assumptions, and different geographic areas; comparison of these forecasts is hindered by these differences.

To reflect the forecasts prepared by different local agencies, a range of population forecasts has been developed for 208 planning.[5] The low end of the range consists of a "SCAG E-0 M" forecast; this forecast uses the California Department of Finance E-0 forecast (a low-growth forecast assuming no net in-migration to the State) and also uses the baseline forecast allocation of increased growth in the region. The high end of the range consists of the highest population forecasts prepared by general and special purpose agencies. The high end of the range varies, depending in the geographic area under consideration. Table III-7 presents a summary of the 1990 population forecast range for county planning areas within the South Coast planning area. As shown, the baseline forecast is about 11,046,000, the low end of the range is about 9,992,000, and the high end of the range is about 12,304,000.

Comparison and Preliminary Assessment of Differences in Growth Forecasts

Agencies participating in the 208 program are developing comparisons and preliminary air and water quality assessments of selected forecasts which have been prepared at the Regional Statistical Area level of detail, using the SCAG-76 forecast as a basis for comparison.

Each agency has 1) compared selected forecasts; 2) preliminarily assessed water quality impacts through examining wastewater and water supply facilities adequacy, qualitatively rating the extent of development on selected land types which may cause water quality problems if improperly developed; and qualitatively rating the effects of the forecasts on selected nonpoint source related water quality problems; and 3) preliminarily assessed air pollutant emissions differences associated with different forecasts. The air and water quality assessment of different growth forecasts are quite preliminary, and will be further refined as the 208 and AQMP programs progress. Results received as of January 6, 1978 are reviewed below.

TABLE III-5

Forecasts Prepared by Local Governments

AGENCY	POPULA-TION	HOUSING	EMPLOY-MENT	LAND USE
LOS ANGELES COUNTY				
Forecasts Prepared By Cities:				
Alhambra	*			
Arcadia	*			
Artesia		*	*	
Avalon	*			*
Azusa	*			*
Baldwin Park	*			*
Bell	*			*
Bellflower				
Bell Gardens	*			*
Beverly Hills	*			*
Bradbury	*	*		
Burbank				
Carson	*	*		*
Cerritos	*	*		*
Claremont				
Commerce	*	*	*	
Compton	*	*		
Covina	*	*		
Cudahy				
Culver City	*	*		*
Downey	*	*		*
Duarte	*			
El Monte	*	*		*
El Segundo	*	*		
Gardena	*	*	*	
Glendale	*	*		*
Glendora	*			
Hawaiian Gardens				
Hawthorne	*	*		
Hermosa Beach	*			
Hidden Hills	*			
Huntington Park	*	*		*
Industry				
Inglewood	*	*		
Irwindale	*	*		
La Canada/Flintridge	*			
Lakewood	*	*		
La Mirada	*			

TABLE III-5 (Cont'd.)

Forecasts Prepared by Local Governments

AGENCY	POPULA-TION	HOUSING	EMPLOY-MENT	LAND USE
LOS ANGELES COUNTY (Cont.)				
La Puente				
La Verne	*	*		
Lawndale	*	*		
Lomita	*	*		*
Long Beach	*	*		
Los Angeles (by planning districts)				
Arleta/Pacoima	*	*	*	*
Bel Air	*	*	*	*
Brentwood	*	*	*	*
Boyle Heights	*	*	*	*
Canoga Park	*	*	*	*
Central City	*	*	*	*
Central City North	*	*	*	*
Chatsworth	*	*	*	*
Encino	*	*	*	*
Granada Hills	*	*	*	*
Hollywood	*	*	*	*
Mission Hills	*	*	*	*
Northeast Los Angeles	*	*	*	*
North Hollywood	*	*	*	*
Northridge Palms	*	*	*	*
Reseda	*	*	*	*
San Pedro	*	*	*	*
Sherman Oaks	*	*	*	*
Siverlake	*	*	*	*
South Central Los Angeles	*	*	*	*
Southeast Los Angeles	*	*	*	*
Sunland Tujunga	*	*	*	*
Sun Valley	*	*	*	*
Sylmar	*	*	*	*
Torrance	*	*	*	*
Van Nuys	*	*	*	*
Venice	*	*	*	*
W. Adams	*	*	*	*
Westchester	*	*	*	*
Westlake	*	*	*	*
West Los Angeles	*	*	*	*
Westwood	*	*	*	*
Wilshire	*	*	*	*
Wilmington	*	*	*	*

TABLE III-5 (Cont'd.)

Forecasts Prepared by Local Governments

AGENCY	POPULA-TION	HOUSING	EMPLOY-MENT	LAND USE
LOS ANGELES COUNTY (cont.)				
Lynwood	*			
Manhattan Beach				*
Maywood	*			
Monrovia	*		*	
Montebello	*			*
Monterey Park	*	*		
Norwalk	*			
Palmdale				
Palos Verdes Estates	*	*		
Paramount	*			
Pasadena	*		*	
Pico Rivera	*			*
Pomona	*			*
Rancho Palos Verdes	*	*		*
Redondo Beach	*	*		
Rolling Hills	*	*		
Rolling Hills Estates	*			*
Rosemead	*			*
San Dimas				
San Fernando	*	*		
San Gabriel	*	*	*	
San Marino	*			*
Santa Fe Springs	*	*		
Santa Monica	*	*		
Sierra Madre	*			
Signal Hill	*	*		*
South El Monte	*			*
South Gate				*
South Pasadena	*	*		
Temple City	*	*		*
Torrance		*		*
Vernon	*			*
Walnut	*	*		*
West Covina	*	*		
Whittier				

TABLE III-5 (Cont'd.)

Forecasts Prepared by Local Governments

AGENCY	POPULA-TION	HOUSING	EMPLOY-MENT	LAND USE
LOS ANGELES COUNTY (Cont.)				
Forecasts Prepared By Los Angeles County For Planning Areas:				
San Fernando Valley	*	*	*	*
Burbank-Glendale	*	*	*	*
West San Gabriel Valley	*	*	*	*
East San Gabriel Valley	*	*	*	*
Malibu-Santa Monica Mountains	*	*	*	*
West	*	*	*	*
Central	*	*	*	*
East Central	*	*	*	*
Southeast	*	*	*	*
South	*	*	*	*
Southwest	*	*	*	*
Santa Clarita Valley	*	*	*	*
Antelope Valley	*	*	*	*
Channel Islands	*	*	*	*
ORANGE COUNTY				
Forecasts Prepared By Cities With County Assistance:				
Anaheim	*	*		*
Brea	*	*		*
Buena Park	*	*		*
Costa Mesa	*	*		*
Cypress	*			*
Fountain Valley	*	*		*
Fullerton	*	*		*
Garden Grove	*	*		*
Huntington Beach	*	*		*
Irvine	*	*		*
Laguna Beach				
La Habra	*	*		*
La Palma	*	*		*
Los Alamitos	*	*		*
Newport Beach	*	*		*
Orange	*	*		*

TABLE III-5 (Cont'd.)

Forecasts Prepared by Local Governments

AGENCY	POPULA-TION	HOUSING	EMPLOY-MENT	LAND USE
O R A N G E C O U N T Y (Cont.)				
Placenta	*	*		*
San Clemente	*	*		*
San Juan Capistrano	*	*		*
Santa Ana	*	*		*
Seal Beach	*	*		*
Stanton	*	*		*
Tustin	*	*		*
Villa Park	*	*		*
Westminister	*	*		*
Yorba Linda	*	*		*
R I V E R S I D E C O U N T Y				
Forecasts from Adopted City and County General Plans:				
Beaumont				*
Corona				*
Hemet	*	*		*
Lake Elsinore				*
Norco	*	*		*
Perris	*			*
Riverside	*	*		*
San Jacinto	*	*		*
S A N B E R N A R D I N O C O U N T Y				
Forecasts Prepared By Southern California Edison and San Bernardino County Planning Department:				
Chino	*			*
Colton	*			*
Fontana	*			
Loma Linda	*			*
Montclair	*	*	*	*
Ontario	*			*
Redlands	*			*
Rialto	*			*
San Bernardino	*			*
Upland	*	*	*	*

TABLE III-5 (Cont'd.)

Forecasts Prepared by Local Governments

AGENCY	POPULA-TION	HOUSING	EMPLOY-MENT	LAND USE
V E N T U R A C O U N T Y				
County Projections Prepared By Growth Areas:				
Thousand Oaks Growth Area	*	*	*	*
Oak Park Growth Area	*	*	*	*
Simi Valley Growth Area	*	*	*	*
Non-Growth Areas	*	*	*	*

TABLE III-6

Forecasts Prepared by Special Purpose Agencies

AGENCY	POPULA-TION	HOUSING	EMPLOY-MENT	LAND USE
WASTEWATER MANAGEMENT AGENCIES				
L O S A N G E L E S C O U N T Y				
Los Angeles County Sanitation [illegible]	*			
[illegible]s Municipal Water District	*			
City of Los Angeles	*	*	*	*
Crescenta Valley County Water District	*			
Los Angeles Regional Water Quality Control Board	*			*
O R A N G E C O U N T Y				
County Sanitation Districts of Orange County	*			*
Southeast Regional Reclamation Authority	*			
Aliso Water Management Agency	*			
Newport Irvine Waste Management Planning Agency	*	*		
Santa Ana Regional Water Quality Control Board	*			*
Irvine Ranch Water District	*	*		
San Diego Regional Water Quality Control Board	*			*
R I V E R S I D E C O U N T Y				
Eastern Municipal Water District	*	*		*
City of Corona	*			
Western Municipal Water District	*			
Santa Ana Regional Water Quality Control Board	*			*

TABLE III-6 (Cont'd.)

Forecasts Prepared by Special Purpose Agencies

AGENCY	POPULA-TION	HOUSING	EMPLOY-MENT	LAND USE
S A N B E R N A R D I N O C O U N T Y				
Chino Basin Municipal Water District	*			
Big Bear Municipal Water District	*			
Yucaipa Valley Municipal Water District	*			*
Santa Ana Regional Water Quality Control Board	*			*
V E N T U R A C O U N T Y				
Triunfo County Sanitiation District	*			
Los Angeles Regional Water Quality Control Board	*			*
II WATER SUPPLY MANAGEMENT/PLANNING AGENCIES				
L O S A N G E L E S C O U N T Y				
City of Los Angeles	*	*	*	*
Los Angeles Regional Water Quality Control Board	*			*
O R A N G E C O U N T Y				
Santa Ana Regional Water Quality Control Board	*			*
San Diego Regional Water Quality Control Board	*			*
City of Anaheim	*			
City of Fullerton	*			
City of Santa Ana	*			
Coastal Municipal Water District	*			
Municipal Water District of Orange County	*			
R I V E R S I D E A N D S A N B E R N A R D I N O C O U N T I E S				
Santa Ana Regional Water Quality Control Board	*			*

TABLE III-6 (Cont'd.)

Forecasts Prepared by Special Purpose Agencies

AGENCY	POPULATION	HOUSING	EMPLOYMENT	LAND USE
VENTURA COUNTY				
Calleguas Municipal Water Company	*	*		
II ENERGY SUPPLY AGENCIES				
LOS ANGELES COUNTY				
Southern California Edison	*	*	*	
City of Los Angeles	*	*	*	*
ORANGE COUNTY				
Southern California Edison	*	*	*	*
San Diego Gas and Electric	*			
RIVERSIDE AND SAN BERNARDINO COUNTIES				
Southern California Edison	*	*	*	*
TRANSPORTATION PLANNING AGENCIES				
ORANGE COUNTY				
Orange County Transit District	*	*	*	
Orange County-Southeast Orange County Circulation Study	*	*	*	*
SAN BERNARDINO COUNTY				
San Bernardino Association of Governments	*	*	*	

TABLE III-6 (Cont'd.)

Forecasts Prepared by Special Purpose Agencies

AGENCY	POPULATION	HOUSING	EMPLOYMENT	LAND USE
VENTURA COUNTY				
Ventura County Association of Governments	*	*		
V RESIDUAL WASTE MANAGEMENT AGENCIES				
LOS ANGELES COUNTY				
Los Angeles County Solid Waste Management Plan	*	*		*
ORANGE COUNTY				
Orange County Solid Waste Management Plan	*			
RIVERSIDE COUNTY				
Riverside County Solid Waste Management Plan	*	*	*	
SAN BERNARDINO COUNTY				
San Bernardino County Solid Waste Management Plan	*		*	

Table III-7

SUMMARY OF POPULATION FORECAST RANGE
FOR 1990 FOR THE SOUTH COAST 208 PLANNING AREA

County Planning Area	1990 - Low (SCAG E-0 M)	1990 - Baseline (SCAG-76 M)	1990 - High (Local/Utility Plan)
Los Angeles/Ventura	7,060,000	7,437,000	8,307,000
Orange	1,902,000	2,369,000	2,512,000
Riverside	426,000	530,000	587,000
San Bernardino	604,000	710,000	898,000
	9,992,000	11,046,000	12,304,000

Source: SCAG. Regional Population, Housing, Employment and Land Use Forecasts: Baseline and Range, 208-5, Volume I, Table S-1, as corrected in Errata Sheet to report.

City of Los Angeles[6]

Comparison of Forecasts. The City has provided separate comparisons of demographic forecasts and wastewater, water supply, power demand, and solid waste demand associated with the demographic forecasts , together with a preliminary air quality assessment. In all cases, City of Los Angeles projections are compared with SCAG-76 projections.

For population forecasts, SCAG projections and City projections are similar; between 1975 and 1995, SCAG-76, as disaggregated by the City, shows an increase of 223,700 and City projections show an increase of 213,000 (including assumptions involving illegal aliens and census undercount) or an increase of 204,000 (without such assumptions). Table III-8 compares the two population forecasts; note that some SCAG-76 RSA's include areas outside the City limits. The City notes that major distributional differences within the City are attributable to SCAG's policy of supporting inner-City development and minimizing suburban development, whereas the City's forecasts "are based on an expected continuation of current trends with growth being limited by zoning and community development constraints."

City housing forecasts are somewhat higher than SCAG-76 housing forecasts due to differences in population and dwelling unit occupancy assumptions, and SCAG shows more dwelling units in the inner City and less in the suburban areas than does the city. Employment projections by the City and less in the suburban areas. Land use forecast comparisons between SCAG and City projections are technically difficult to make due to differences in base years and reporting units. SCAG-76 projections show less open space in the northeast San Fernando Valley and more open space in the Palos Verdes peninsula and the Glendale area.

Preliminary Water Quality Assessment. For wastewater generation and water supply, the differences between the SCAG-76 and City population forecast are minor, resulting in less than a 1% difference in wastewater flow or water demand. Existing and planned capacity of wastewater facilities appear sufficient for either projection.

Table III-9 presents a qualitative rating of the extent of development on selected land types; the City projects that 67% of future development will occur on land overlying aquifers and that by 1995 "all vacant land which may be considered overlying an aquifer" will be developed due to fill-in development.

Preliminary Energy and Solid Waste Assessments. The Los Angeles Department of Water and Power projects a 1990 electrical consumption of 116,000 gigawatt hours, compared to SCAG-76 calculations of 153,000 gigawatt hours; differences are mainly due to a higher per capita use assumed in the SCAG-76 calculations. For solid waste, only minor differences in generation are apparent between the population forecast for the City in the Los Angeles County Solid Waste management plan and the SCAG-76 population forecast.

TABLE III-8
Comparison of Population
Forecasts (Number of Residents)
-Los Angeles City

RSA	SCAG '76	FORECAST CITY* TOTAL	PERCENT OF SCAG '76
RSA 12			
1975	564,000	585,945	104%
1980	588,000	602,800	103%
1985	N.A.	633,500	
1990	637,000	655,700	103%
1995	656,000	671,500	102%
2000	675,000	682,100	101%
RSA 13			
1975	257,000	227,202*	88%
1980	259,000	229,300	89%
1985	N.A.	237,500	
1990	269,000	243,100	90%
1995	275,000	247,900	90%
2000	281,000	250,400	89%
RSA 14			
1975	270,000	260,717	97%
1980	271,000	264,177	97%
1985	N.A.	271,859	
1990	280,000	278,459	99%
1995	283,000	283,265	100%
2000	286,000	287,460	100%
RSA 16			
1975	313,000	202,492	65%
1980	324,000	205,800	64%
1985	N.A.	211,000	
1990	339,000	216,600	64%
1995	344,500	220,100	64%
2000	350,000	222,400	64%
RSA 17			
1975	908,000	892,414	98%
1980	917,000	893,400	97%
1985	N.A.	900,700	
1990	960,000	911,400	95%
1995	973,500	922,800	95%
2000	987,000	930,100	94%

Table III-8 (Cont'd.)

RSA	SCAG '76	FORECAST CITY* TOTAL	PERCENT OF SCAG '76
RSA 18			
1975	515,500	79,735	15%
1980	520,000	79,500	15%
1985	N.A.	81,000	
1990	537,000	82,600	15%
1995	547,000	84,000	15%
2000	557,000	85,000	15%
RSA 19			
1975	429,000	168,965	39%
1980	442,000	170,800	39%
1985	N.A.	175,200	
1990	461,000	179,800	39%
1995	469,000	182,300	39%
2000	477,000	184,000	39%
RSA 21			
1975	775,000	385,268	50%
1980	778,000	380,300	49%
1985	N.A.	381,400	
1990	800,000	385,200	48%
1995	809,000	387,100	48%
2000	818,000	388,400	47%
RSA 23			
1975	83,000	112,272	135%
1980	86,000	109,700	128%
1985	N.A.	110,600	
1990	103,000	112,300	109%
1995	110,000	113,900	104%
2000	117,000	115,000	98%
RSA 24			
1975	405,000	427,654	106%
1980	408,000	427,600	105%
1985	N.A.	432,000	
1990	421,000	438,100	104%
1995	428,000	443,000	104%
2000	435,000	446,500	103%

*These figures are projections and include a census undercount of 125,000 and a total of 400,000 illegal aliens.

Source: City of Los Angeles, 208 Planning Task 14 Draft Report, Table 39.

Table III-9

COMPARISON OF LAND USE FORECASTS: EXTENT OF DEVELOPMENT OF SELECTED LAND TYPES-Los Angeles City

		Extent of Development On							
Forecast & RSA	Added Urban Acres	Land Overlying Aquifers	Lands With Erodable Soils	Aquifer Recharge Areas	Steep Slopes	Flood Plains	Wetlands Estuaries	Forests	Agricultural
SCAG '76									
RSA #12	5410	High	Low[2]	None	Low[1]	None	None	None	Moderate
RSA #13	734	High	Low[2]	None	Low[1]	None	None	None	Low
RSA #14	1510	High	Low[2]	None	Low	None	None	None	Low
RSA #16	1407	Low	Low[2]	None	Low[1]	None	None	None	None

NOTES:

1. Urbanizable undeveloped lands characterized by steep slopes exist in these RSA's; however, land use and building code regulations effectively limit development there to low densities.

2. Specific information is not available for all areas on the extent of erodable soil; however, stringent building code provisions require stabilization before development can occur.

Source: City of Los Angeles, 208 Planning Task 14 Draft Report, Table 47.

Preliminary Air Quality Assessment. Because the differences in population, housing, and employment (which are inputs to the calculation of emissions indices) are small, the differences between the emissions associated with the two forecasts are negligible.

County of Los Angeles[7]

Comparison of Forecasts. Forecasts compared by Los Angeles County include SCAG-76, the Los Angeles County Draft General Plan, the County Solid Waste Management Plan forecasts, and three other SCAG forecasts used for past planning projects within the County (SCAG E-0, SCAG D/E 2a, and SCAG D-150). Table III-10 presents the comparison of the SCAG-76 and Draft General Plan forecasts by RSA, and presents a comparison of all forecasts for the entire County. The forecast in the Draft General Plan projects 558,000 more residents (8 percent growth) between 1975 and 1995, whereas SCAG-76 projects 711,228 more residents (10 percent growth) during the same 20-year interval. In terms of distribution, the Draft General Plan compared to SCAG-76 shows greater allocations in the Northeast San Fernando Valley, Burbank, West-Central Los Angeles, Palos Verdes, Norwalk-Whittier, and the Los Angeles CBD (RSA's 12, 13, 17, 19, 22, and 23).

The Draft General Plan housing and employment forecasts have also been compared with SCAG-76 for housing, the Draft General Plan projects, an increase of 425,473 housing units between 1975 and 1995, as compared to an increase of 332,399 units in SCAG-76 over the same period. The reason for the difference lies in the assumption of a lower average household size in the Draft General Plan. For employment, the Draft General Plan projects slightly more jobs than SCAG-76, with a more concentrated pattern of employment growth.

Preliminary Water Quality Assessment. For wastewater facilities, a number of apparent existing insufficiencies exist in the County (RSA's 7, 8, 9, 10, 15, 17, and 25), but most of these are expected to be resolved by facilities plans in the near future and eliminated before 1995. For water supply, facilities and supplies appear to be adequate for all forecasts if it is assumed that the current drought does not continue and that sufficient imported water supplies will continue to be available.

Table III-11 presents a qualitative rating of the extent of development on selected land types for the SCAG-76 forecast, which was the only one available which presents land use forecasts by RSA. As shown by this table, a moderate or high extent of development may occur, in selected RSA's, on land overlying aquifers, steep slopes, agricultural land, and land with erodable soils. Table III-12 forecasts a qualitative rating of the effect of the SCAG-76 on selected water quality problems. Generally, the impacts are either minimal or uncertain.

TABLE III-10
COMPARISON OF POPULATION FORECASTS (NUMBER OF RESIDENTS)-LOS ANGELES COUNTY

Stat. Area and Year	SCAG '76	L.A. Co. G.P.	Difference from SCAG '76	
7			#	%
1975	27,898	29,000	1,102	4.0
1980	35,000	37,000	2,000	5.7
1985	39,000	43,000	4,000	10.3
1990	43,000	48,000	5,000	11.6
1995	47,500	52,000	5,500	10.6
2000	52,000	56,000	4,000	7.7
8				
1975	60,035	63,000	32,965	4.9
1980	70,000	78,000	32,965	11.4
1985	76,500	81,000	5,500	5.9
1990	83,000	96,000	13,000	15.7
1995	90,000	105,000	15,000	6.7
2000	97,000	114,000	17,000	17.5
9				
1975	55,762	N/A*	---	---
1980	68,000	N/A*	---	---

*Forecast cannot be disaggregated; the combined total for RSA 9, 10, and 11 is 1975--89,000 (-2.3%); 1980--98,000 (-8.3%); 1985--112,000 (-16.7%); 1990--130,000 (-19.8%); 1995--170,000 (-12.4%); 2000--218,000 (-21.9%).

Stat. Area and Year	SCAG '76	L.A. Co. G.P.	Difference from SCAG '76	
9 Cont.			#	%
1985		N/A*	---	---
1990	101,000	N/A*	---	---
1995	119,500	N/A*	---	---
2000	190,000	N/A*	---	---
10				
1975	33,541	N/A*	---	---
1980	37,000	N/A*	---	---
1985		N/A*	---	---
1990	59,000	N/A*	---	---
1995	73,000	N/A*	---	---
2000	87,000	N/A*	---	---
11				
1975	1,806	N/A*	---	---
1980	1,900	N/A*	---	---
1985		N/A*	---	---
1990	2,000	N/A*	---	---

*Forecast cannot be disaggregated; the combined total for RSA 9, 10, and 11 is 1975--89,000 (-2.3%); 1980--98,000 (-8.3%); 1985--112,000 (-16.7%); 1990--130,000 (-19.8%); 1995--170,000 (-12.4%); 2000--218,000 (-21.9%).

Stat. Area and Year	SCAG '76	L.A. Co. G.P.	Difference from SCAG '76	
11 Cont.			#	%
1995		N/A*	---	---
2000	2,000	N/A*	---	---
12				
1975	564,005	563,000	- 1,000	- .2
1980	588,000	590,000	2,000	.3
1985	612,503	602,000	-10,503	-1.8
1990	637,000	609,000	-28,000	-4.4
1995	656,000	619,000	-42,000	-6.9
2000	675,000	625,000	-50,000	-7.4
13				
1975	256,791	256,000	- 791	- .3
1980	259,000	258,000	- 1,000	- .4
1985	264,000	260,000	- 4,000	-1.5
1990	269,000	263,000	- 5,000	-2.8
1995	275,000	265,000	-10,000	-3.6
2000	281,000	266,000	-15,000	-5.3

*Forecast cannot be disaggregated; the combined total for RSA 9, 10, and 11 is 1975--89,000 (-2.3%); 1980--98,000 (-8.3%); 1985--112,000 (-16.7%); 1990-130,000 (-19.8%); 1995--170,000 (-12.4%); 2000--218,000 (-21.9%).

Stat. Area and Year	SCAG '76	L.A. Co. G.P.	Difference from SCAG '76	
14			#	%
1975	269,745	270,000	255	.1
1980	271,000	280,000	9,000	3.3
1985	275,500	285,000	9,500	3.6
1990	280,000	290,000	10,000	3.6
1995	283,000	292,000	9,000	3.2
2000	286,000	294,000	8,000	2.8
15				
1975	15,478	16,000	522	3.4
1980	19,000	21,000	3,000	10.5
1985	21,000	22,000	1,000	4.8
1990	23,000	23,000	0	---
1995	25,000	23,000	- 2,000	- 8
2000	27,000	23,000	- 4,000	-14.8
16				
1975	313,121	312,000	- 1,121	- .4
1980	324,000	313,000	-11,000	- 3.4

TABLE III-10 (Continued)

Stat. Area and Year	SCAG '76	L.A. Co. G.P.	Difference from SCAG '76 #	%
16 Cont.				
1985	331,500	321,000	-10,000	-3.2
1990	339,000	330,000	- 9,000	-2.7
1995	344,500	335,000	- 9,500	-2.6
2000	350,000	342,000	- 8,000	-2.3
17				
1975	908,063	899,000	- 9,000	- .1
1980	917,000	902,000	- 6,000	-1.7
1985	938,500	913,000	-25,000	-2.7
1990	960,000	926,000	-34,000	-3.5
1995	973,500	936,000	-37,000	-3.9
2000	987,000	945,000	-42,000	-4.3
18				
1975	515,515	512,000	- 3,515	- .7
1980	520,000	516,000	- 4,000	- .8
1985	528,500	524,000	- 3,500	- .9
1990	537,000	531,000	- 6,000	-1.1

Stat. Area and Year	SCAG '76	L.A. Co. G. P.	Difference from SCAG '76 #	%
18 Cont.				
1995	547,000	536,000	- 11,000	- 2.0
2000	557,000	541,000	- 16,000	- 2.9
19				
1975	429,159	426,000	- 3,159	- .7
1980	442,000	431,000	- 11,000	- 2.5
1985	451,500	435,000	- 16,500	- 3.7
1990	461,000	440,000	- 21,000	- 4.6
1995	469,000	444,000	- 25,000	- 5.3
2000	477,000	447,000	- 30,000	- 6.3
20				
1975	415,387	412,000	- 3,387	- .8
1980	424,000	414,000	- 10,000	- 2.4
1985	436.000	424,000	- 12,000	- 2.8
1990	448,000	434,000	- 14,000	- 3.1
1995	457,000	441,000	- 16,000	- 3.5
2000	462,000	449,000	- 13,000	- 2.8

Stat. Area and Year	SCAG '76	L.A. Co. G.P.	Difference from SCAG '76 #	%
21				
1975	774,927	769,000	- 5,927	- .8
1980	778,000	783,000	5,000	.6
1985	789,000	792,000	3,000	.3
1990	800,000	799,000	- 1,000	- .01
1995	809,000	806,000	- 3,000	- .4
2000	818,000	816,000	- 2,000	- .2
22				
1975	615,645	613,000	- 2,645	- .4
1980	634,000	614,000	-20,000	-3.2
1985	646,000	623,000	-23,000	-3.6
1990	658,000	633,000	-23,000	-3.8
1995	669,000	640,000	-29,000	-4.3
2000	680,000	647,000	-33,000	-4.9
23				
1975	83,102	82,000	1,102	-1.3
1980	86,000	83,000	3,000	-3.5

Stat. Area and Year	SCAG '76	L.A. Co. G.P.	Difference from SCAG '76 #	%
23 Cont.				
1985	94,500	8,400	-10,500	-11.2
1990	103,000	86,000	-17,000	-16.5
1995	110,000	87,000	-23,000	-20.9
2000	117,000	90,000	-27,000	-23.1
24				
1975	404,766	401,000	- 3,766	- .9
1980	408,000	406,000	- 2,000	- .5
1985	474,500	413,000	- 1,500	- .2
1990	421,000	415,000	- 7,000	- 1.5
1995	428,000	420,000	- 8,000	- 1.9
2000	435,000	428,000	- 7,000	- 1.6
25				
1975	655,161	652,000	3,161	- .5
1980	658,000	652,000	- 6,000	- .9
1985	663,500	661,000	- 2,000	- .4
1990	669,000	670,000	1,000	.1

TABLE III-10 (Continued)

tat. Area nd Year	SCAG '76	L.A. Co. G.P.	Difference from SCAG '76	
			#	%
25 Cont.				
1995	676,500	675,000	- 1,500	- .2
2000	684,000	680,000	- 4,000	- .6
26				
1975	470,628	474,000	3,372	.7
1980	482,000	498,000	16,000	3.3
1985	491,000	513,000	22,000	4.5
1990	500,000	520,000	20,000	4.0
1995	510,000	528,000	18,000	3.5
2000	520,000	534,000	14,000	2.7
27				
1975	150,232	153,000	3,768	1.8
1980	155,000	164,000	9,000	5.8
1985	159,500	171,000	11,500	7.5
1990	164,000	176,000	12,000	7.3
1995	167,500	179,000	11,500	6.9
2000	171,000	182,000	11,000	6.4

FORECAST	1975	1980	1985	1990	1995
SCAG 76	7,020,772	7,176,900	7,366,950*	7,557,000	7,732,000
D/E 2a	7,111,591*	7,184,417	7,442,858*	7,701,359	7,866,213*
CoSWMP**	7,020,655	7,102,330	7,308,446*	7,514,512	7,551,073*
D - 150	7,341,540*	7,651,890	8,156,980*	8,662,070	9,143,005*
E - 0	7,181,887*	7,325,010	7,489,775*	7,654,540	7,773,605*
LA.Co.GP	6,993,000	7,140,000	7,287,000	7,422,000	7,551,000

* These forecasts were developed through interpolation

** CoSWMP forecasts are for the 208 Planning Area only; all others are for the whole County

ource: Los Angeles County, 208 Planning Task 15 Draft Final Report, Tables 6B, 12.

TABLE III-11
COMPARISON OF LAND USE FORECASTS: EXTENT OF DEVELOPMENT ON SELECTED LAND TYPES
SCAG 76 FORECAST

Rsa	Added Acres 75-95	Land Overlying Aquifers	Flood Plains	Steep Slopes	Agri-cultural Land	Aquifer Recharge Areas	Wetlands/ Estuaries	Forest	Land With Erodable Soils
7	1,463	low	none	moderate	moderate	none	none	none	high
8	1,063	moderate	low	very low	very low	none	none	very low	high
9	6,668	high	low	very low	moderate	none	none	very low	moderate
10	4,207	high	low	very low	moderate	none	none	none	moderate
11	- 25	none	none	none	none	none	none	none	none
12	4,130	low	none	low	moderate	none	none	none	none
13	697	none	none	none	none	none	none	none	none
14	1,081	high	none	low	high	none	none	none	moderate
15	483	high	none	moderate	moderate	none	none	none	moderate
16	999	moderate	none	none	low	none	none	none	none
17	172	moderate	none	high	moderate	none	none	none	low
18	329	none	none	none	high	none	none	none	very low
19	412	moderate	none	high	moderate	none	none	none	moderate
20	154	none	none	none	none	none	none	none	none
21	234	high	none	none	high	none	none	none	very low
22	3,261	high	none	none	high	none	none	none	low
23	0	none	none	none	none	none	none	none	none
24	150	moderate	none	high	none	none	none	none	low
25	468	high	none	high	high	none	none	none	low
26	3,179	high	none	high	high	none	none	none	moderate
27	282	high	none	high	moderate	none	none	none	moderate

Source: Los Angeles County, 208 Planning Task 15 Draft Final Report, Table 18.

TABLE III-12

LAND USE FORECASTS: EFFECTS ON IDENTIFIED NONPOINT-RELATED WATER QUALITY PROBLEMS - Los Angeles County

WATER QUALITY PROBLEM	PROBABLE IMPACT OF SCAG '76 FORECAST ON PROBLEM	COMMENTS
GROUNDWATER PROBLEMS		
High Nitrate Concentrations Verdugo Basin	Uncertain	If additional urban acreage is unsewered and drains into Verdugo Basin, the probable impact will be adverse. If the development is sewered, there will be no impact. Replacement of agricultural acreage may have beneficial impact.
High Nitrate Concentrations Upper San Gabriel and Spadra Basins	Uncertain	See above comment.
High TDS, Montebello Forebay	Uncertain	Additional water demand and need for reclaimed wastewater spreading may make quality control more expensive and difficult to manage.
Upper Santa Clara River Groundwater Overdraft	No Impact	Imported water (California Project Water) to be used. Local groundwater use to be reduced.
SURFACE WATER PROBLEMS		
Upper Santa Clara River High TDS	Uncertain	Unsewered development may aggravate nitrate and high TDS problems.
Erosion and Siltation, Mountain Watersheds	No Impact	
Malibu Creek - Water Quality Problems	Uncertain/Adverse	Possible septic tank failure-related contamination, siltation due to construction activities. Increased contamination due to more intensive recreational use of the watershed. Effluent disposal from Tapia Treatment Plant may become more critical.
Coyote Creek - Water Quality Problems	Beneficial	Dairy feedlot operations, agricultural uses believed primarily responsible; these to decline as urban land use increases.
Ballona Creek and Lagoon Water Quality Problems	Adverse	Increased urban area may increase heavy metal contamination due to urban runoff. More intense recreational uses may aggravate the problems and make impact more critical.

Source: Los Angeles County, 208 Planning Task 15 Draft Final Report, Table 19

Preliminary Air Quality Assessment. The emissions indices for the the SCAG-76, Draft General Plan, and three previous SCAG forecasts (D/E-2a, D-150, and E-0) have been compared. Emissions indices are comparable for the SCAG-76 and County General Plan forecasts, and higher than both of these forecasts for the D/E-2a, D-150, and E-0 forecasts.

Orange County.[8]

Comparison of Forecasts. Orange County has compared the SCAG-76, Santa Ana and San Diego RWQCB Basin Plans, Orange County Transit District (OCTD) and Southern California Edison/Southern California Gas and Electric (SCE/SDG & E) forecasts. Table III-13 presents a comparison of the population forecasts for the County as a whole. Countywide, the SCE/SDG & E forecasts are highest, followed by the RWQCB's, SCAG-76, and OCTD forecasts. In terms of distribution, the RWQCB's forecast shows relatively more growth in the urbanized portions of the County than SCAG-76, whereas the SCE/SDG & E forecasts shows relatively more growth in the developing portions of the County.

Housing, employment and land use forecasts have also been compared. For both housing and employment, the SCE/SDG & E forecasts show slightly fewer dwelling units and jobs countywide than SCAG-76, and the SCE/SDG & E forecasts also show relatively more housing units and jobs in the developing portions of the County than SCAG-76. For land use, the SCE/SDG & E forecast, compared to the SCAG-76 forecast, shows about the same number of residential acres, slightly more industrial acres, and significantly more commerical acres (52% more) by 1990.

Preliminary Water Quality Assessment. Orange County has assessed the 1993 SCE/SDG & E land use forecasts for extent of development on selected land types, and also compared this forecast to observed development trends. To variable degrees, development is proceeding or is projected to proceed on land overlying aquifers, land with erodable soils, steep slopes and flood plains. Table III-14 presents a qualitative rating of the growth projected in the SCE/SDG & E land use forecasts on identified nonpoint source related water quality problems. As shown, the forecast is rated as having uncertain impacts, no impact or a beneficial impact on these water quality problems.

Preliminary Air Quality Assessment. The emissions indices for the SCAG-76, OCTD, and SCE/SDG & E forecasts have been compared. All three forecasts show the same general trends in emissions indices.

Table III-13

Comparison of Population Forecasts(Number of Residents)-Orange County

	Total County	
Forecasts	Number of Residents	% of SCAG '76
SCAG '76		
1970	1,413,916	
1976	1,722,094	
1980	1,962,000	
1990	2,369,000	
1995	2,513,000	
2000	2,656,000	
RWQCB Basin Plans		
1975	1,654,000	96.0
1980	1,899,100	96.7
1985	2,147,700	
1990	2,398,700	101.2
1995	2,541,200	101.1
2000	2,720,500	102.4
OCTD		
1970	1,420,441	100.5
1990	2,244,010	94.7
SCE/SDG+E		
1975	1,733,700	100.9
1980	2,061,700	105.0
1985	2,325,200	
1990	2,501,400	105.6
1995	2,677,400	106.5

Source: Orange County, 208 Planning Task 15 Draft Final Report, Table 4.

Table III-14

COMPARISON OF LAND USE FORECASTS

EFFECTS ON IDENTIFIED NON-POINT RELATED

WATER QUALITY PROBLEMS

Water Quality Problem	SCAG '76	RWQCB Basin Plans	OCTD	SCE/SDG&E
	Forecasts			
Groundwater Problems				
1. High Nitrate Concentrations in Groundwaters	No land use maps were available for SCAG '76, RWQCB Basin Plans and OCTD forecasts.			Uncertain
2. High Dissolved Solids Content of Groundwaters				Uncertain
3. High Nitrate Groundwater near Garden Grove and La Habra				Beneficial
4. Increased Groundwater Hardness and Salinity near Completed Landfills				Uncertain
5. Unsewered Communities				Beneficial
6. Selenium in Groundwater in Fullerton				No Impact
7. High Total Dissolved Solids in San Juan Creek Area				Uncertain
8. High Total Dissolved Solids in Aliso Creek Watershed				Uncertain
Surfacewater Problems				
1. High Nutrient Concentrations in Newport Bay				Uncertain
2. Siltation in Upper Newport Bay				Beneficial
3. Biocides in Newport Bay				Uncertain
4. Erosion and Siltation in Mountain Watersheds				No Impact
5. High Total Dissolved Solids and Nitrates in Dairy Feedlot Runoff to Santa Ana River Reach II				No Impact
6. High Nutrient Levels in San Juan Creek				Uncertain
7. Siltation in Salt Creek				Beneficial
8. Water Quality in San Joaquin Marsh				Uncertain
9. Bacteriological Quality of Surface Streams				Uncertain
10. Bacterial Concentrations in Santa Ana River Reach II				No Impact

SOURCE: Orange County, 208 Planning Task 15 Draft Final Report, Table 13.

Riverside County.[9]

Comparison of Forecasts. Riverside County has compared the SCAG-76 forecast with numerous other forecasts, including those prepared by Southern California Edison/Environmental Systems Research Institute (ESRI), a forecast prepared by Urbanomics Research Associates, and a forecast used in the Santa Ana River Basin Water Quality Control Plan.

Table III-15 compares the various population forecasts. The population forecasts are similar in the northwestern portion of Riverside County (RSA's 45, 46, and 48), but differ in the remainder of the County planning area (RSA's 47, 49, 50, and 51).

Housing, employment, and land use forecasts have also been compared. For housing and employment, forecasts in the County Solid Waste Management Plan agree with those of SCAG-76. Significant differences appear in the land use forecasts; in particular, the Santa Ana Water Quality Control Plan and ESRI land use forecasts show more urban uses than the SCAG-76 forecast, with the exception of RSA 50.

Preliminary Water Quality Assessment. For wastewater facilities, deficiencies in existing capacity exist in RSA 45, though planned capacity there appears sufficient to serve future flows for most of the forecasts. For water supply, existing and planned supplies and facilities appear adequate to accommodate growth associated with most forecasts, though isolated water supply deficiencies have occurred and the effects of water conservation efforts are uncertain.

Table III-16 presents a qualitative rating of the extent of development on selected land types; note the extent of development on land overlying aquifers. Table III-17 presents a qualitative rating of the effect of the forecasts on selected water quality problems; adverse impacts for the various forecasts are apparent for salt balance in several groundwater basins; for high TDS in the Santa Ana River; and for growth outstripping sewage treatment capacity.

Preliminary Air Quality Assessment. The emissions indices for the SCAG-76, Urbanomics, Solid Waste Management Plan, and Santa Ana Water Quality Control Plan have been compared. In general, the emissions indices for the various forecasts are comparable, with the ESRI indices being the lowest.

Table III-15

COMPARISON OF POPULATION FORECASTS
(Number of Residents) –

Riverside County

RSA	SCAG 76	WQCP BASIN 8 FORECAST Total	Difference SCAG '76 #	Difference SCAG '76 %	CITY OF NORCO GENERAL PLAN Total	CITY OF NORCO GENERAL PLAN % of SCAG 76	CITY OF RIVERSIDE GENERAL PLAN Total	CITY OF RIVERSIDE GENERAL PLAN % of SCAG 76	HEMET-SAN JACINTO GENERAL PLAN Total	Difference SCAG 76 #	Difference SCAG 76 %	PERRIS VALLEY GENERAL PLAN Total	PERRIS VALLEY GENERAL PLAN % of SCAG
RSA 45													
1975	40,251	40,310	59	+.01									
1980	44,000	45,200	1,200	+2.7									
1985	47,500*	50,100	2,600	+5.5									
1990	51,000	55,000	4,000	+7.8									
1995	54,500	59,890	5,390	+9.9									
2000	58,000	64,820	6,820	+11.8									
RSA 46													
1975	250,237	249,648	589	-0.2	24,000	9.6	280,000[2]	111.9					
1980	281,000	280,752	248	-0.1	31,000	11.0	370,000[2]	131.7					
1985	312,000*	312,725	725	+0.2	40,000	12.8	490,000[2]	157.1					
1990	343,000	347,640	4,640	+1.4			660,000[2]	192.4					
1995	379,000	381,439	2,439	+0.6									
2000	416,000	419,053	3,053	+0.7									
RSA 47													
1975	28,300	40,563	12,263	+43.3									
1980	32,500	48,614	16,114	+49.6									
1985	35,250*	56,398	21,148	+55.7									
1990	38,000	64,177	26,177	+68.9								11,650	30.7
1995	41,800	69,570	27,770	+66.4									
2000	45,600	74,833	29,233	+64.1									
RSA 48													
1975	44,541	43,460	1,081	-2.4					43,525	1,016	-2.3		
1980	52,000	53,521	1,521	+2.9					54,410	2,410	+4.6		
1985	59,000*	62,384	3,384	+5.7					60,000	1,000	+1.7		
1990	66,000	71,247	5,247	+8.0									
1995	71,000	78,183	7,183	+10.1									
2000	76,000	83,420	7,420	+9.8									
RSA 49													
1975	7,161[1]	9,676	2,515	+35.1									
1980	8,375[1]	10,756	2,381	+28.4									
1985	9,385*[1]	11,821	2,436	+26.0									
1990	10,395[1]	12,956	2,561	+24.6									
1995	11,167[1]	13,985	2,818	+25.2									
2000	11,999[1]	15,031	3,032	+25.3									
RSA 50													
1975	15,595[1]	10,893	4,702	-30.2									
1980	16,710[1]	12,152	4,558	-27.3									
1985	17,824[1]*	13,406	4,418	-24.8									
1990	18,938[1]	14,669	4,269	-22.5									
1995	19,996[1]	15,903	4,093	-20.5									
2000	21,055[1]	17,138	3,917	-18.6									
RSA 51													
1975	2,798[1]	4,344	1,546	+55.3									
1980	3,227[1]	5,062	1,835	+56.9									
1985	3,585[1]*	5,778	2,193	+61.2									
1990	3,944[1]	6,499	2,555	+64.8									
1995	4,374[1]	7,222	2,848	+65.1									
2000	4,876[1]	7,933	3,057	+62.7									
TOTAL													
1975	388,883	398,894	10,011	+2.6									
1980	437,812	456,057	18,245	+4.2									
1985	484,544*	512,612	28,068	+5.8									
1990	531,277	572,188	40,911	+7.7									
1995	581,837	626,192	44,355	+7.6									
2000	633,530	682,228	48,698	+7.6									

* Extrapolated from SCAG 1980 and 1990 figures.
[1] Figures reflect 208 Planning Area portion of RSA as estimated by Riverside County Planning Department (59.4% of RSA 49, 55.7% of RSA 50, and 71.7% of RSA 51).
[2] Includes RSA 45 and part of RSA 46.

Table III-15 (Cont'd.)

COMPARISON OF POPULATION FORECASTS
(Number of Residents)

RSA	SCAG 76	ESRI Total	ESRI Difference SCAG 76 #	ESRI Difference SCAG 76 %	URBANOMICS MID-RANGE Total	URBANOMICS Difference SCAG 76 #	URBANOMICS Difference SCAG 76 %	RIVERSIDE COUNTY GENERAL PLAN Total	RIVERSIDE COUNTY GENERAL PLAN % of SCAG 76	SOLID WASTE MANAGEMENT PLAN Total	SOLID WASTE Difference SCAG 76 #	SOLID WASTE Difference SCAG 76 %
RSA 45												
1975	40,251	40,005	246	-0.6	42,950	2,699	+6.7					
1980	44,000				48,800	4,800	+10.9					
1985	47,500*	49,305	1,805	+3.8				92,900	+195.6			
1990	51,000				62,000	11,000	+21.6			61,996	10,996	+21.6
1995	54,500	57,405	2,905	+5.3								
2000	58,000											
RSA 46												
1975	250,237	242,279	7,958	-3.2	252,175	1,938	+0.8					
1980	281,000				284,675	3,675	+1.3					
1985	312,000*	303,015	8,985	-2.9				465,800	+149.3			
1990	343,000				351,200	8,200	+2.4			349,354	6,354	+1.9
1995	379,000	353,674	25,326	-6.7								
2000	416,000											
RSA 47												
1975	28,300	27,759	541	-1.9	28,950	650	+2.3					
1980	32,500				35,350	2,850	+8.8					
1985	35,250*	34,223	1,027	-2.9				57,800	+164.0			
1990	38,000				48,150	10,150	+26.7			46,387	8,387	+22.1
1995	41,800	39,364	2,436	-5.8								
2000	45,600											
RSA 48												
1975	44,541	42,877	1,664	-3.7	42,850	1,691	-3.8					
1980	52,000				51,350	650	-1.3					
1985	59,000*	55,377	3,623	-6.1				70,400	+119.3			
1990	66,000				68,400	2,400	+3.6			68,327	2,327	+3.5
1995	71,000	66,277	4,723	-6.7								
2000	76,000											
RSA 49												
1975	7,161[1]	8,050	889	+12.4	5,999	1,162	-16.2					
1980	8,375[1]				6,534	1,841	-22.0					
1985	9,385[1]*	9,650	265	+2.8				13,000	+138.5			
1990	10,395[1]				7,544	2,851	-27.4			14,390	3,995	+38.4
1995	11,167[1]	11,050	117	-1.0								
2000	11,999[1]											
RSA 50												
1975	15,595[1]	11,958	3,637	-23.3	16,654	1,059	+6.8					
1980	16,710[1]				18,353	1,643	+9.8					
1985	17,824[1]*	13,285	4,539	-25.5				36,484	+204.7			
1990	18,938[1]				21,723	2,785	+14.7			21,740	2,802	+14.8
1995	19,996[1]	14,658	5,338	-26.7								
2000	21,055[1]											
RSA 51												
1975	2,798[1]	3,836	1,038	+37.1	2,617	181	-6.5					
1980	3,227[1]				3,047	180	-5.6					
1985	3,585[1]*	5,436	1,851	+51.6				4,445	+124.0			
1990	3,944[1]				3,915	29	-0.7					
1995	4,374[1]	6,336	1,962	+44.9								
2000	4,876[1]											
TOTAL												
1975	388,883	376,764	12,119	-3.1	392,195	3,312	+0.9					
1980	437,812				448,109	10,297	+2.4					
1985	484,544*	470,291	14,253	-2.9								
1990	531,277				562,932	31,655	+6.0			562,194	30,917	+5.8
1995	581,837	548,764	33,073	-5.7								
2000	633,530											

* Extrapolated from SCAG 1980 and 1990 figures.

1 Figures reflect 208 Planning Area portion of RSA as estimated by Riverside County Planning Department (59.4% of RSA 49, 55.7% of RSA 50, and 71.7% of RSA 51).

2 Includes RSA 45 and part of RSA 46.

Source: Riverside County 208 Planning Task 10 Final Report, Table 6.

Table III-16

COMPARISON OF LAND USE FORECASTS:
EXTENT OF DEVELOPMENT ON SELECTED LAND TYPES -
Riverside County

FORECAST AND RSA	ADDED URBAN ACRES 75-95	LAND OVERLYING AQUIFERS	LANDS WITH ERODABLE SOIL	AQUIFER RECHARGE AREAS	STEEP SLOPES	FLOOD PLAINS	WETLANDS ESTUARIES	FORESTS	AGRICULTURAL LAND
SCAG '76									
RSA 45	1,790	High	Uncertain	None	None	None	None	None	High
RSA 46	11,249	High	Uncertain	None	Low	Low	None	None	High
RSA 47	2,084	High	Uncertain	None	Low	None	None	None	Low
RSA 48	3,324	High	Uncertain	None	None	Low	None	None	Moderate
RSA 49	823*	Moderate	Uncertain	None	None	None	None	None	Low
RSA 50	649*	High	Uncertain	None	None	None	None	None	High
RSA 51	292*	Low	Uncertain	None	Low	None	None	Low	None
Total	20,211								
ESRI									
RSA 45	3,299	High	Uncertain	None	None	None	None	None	High
RSA 46	16,992	High	Uncertain	None	Low	Low	None	None	High
RSA 47	2,953	High	Uncertain	None	Low	None	None	None	Low
RSA 48	3,574	High	Uncertain	None	None	Low	None	None	Moderate
RSA 49	1,244*	Moderate	Uncertain	None	None	None	None	None	Low
RSA 50	337*	High	Uncertain	None	None	None	None	None	High
RSA 51	584*	Low	Uncertain	None	Low	None	None	Low	None
Total	28,983								
Riverside Co. General Plan[1]									
RSA 46	10,893*	High	Uncertain	None	None	None	None	None	Moderate
RSA 47	18,532*	High	Uncertain	None	None	None	None	None	High
RSA 49	2,827*	High	Uncertain	None	None	None	None	None	High
RSA 51	264*	Moderate	Uncertain	None	Low	None	None	Low	Low
Hemet-San Jacinto[2]									
RSA 48	19,440	High	Uncertain	None	Low	Moderate	None	None	High
San Gorgonio Pass[3]									
RSA 50	5,816	High	Uncertain	None	None	None	None	None	Moderate
Jurupa[3]									
RSA 45	8,600	High	Uncertain	None	None	None	None	None	Moderate
Total	66,378								
WQCP Basin 8									
RSA 45	1,650	High	Uncertain	None	None	None	None	None	High
RSA 46	8,601	High	Uncertain	None	Low	Low	None	None	High
RSA 47	3,012	High	Uncertain	None	Low	None	None	None	Low
RSA 48	2,606	High	Uncertain	None	None	Low	None	None	Moderate
RSA 49	385	Moderate	Uncertain	None	None	None	None	None	Low
RSA 50	842	High	Uncertain	None	None	None	None	None	High
RSA 51	461	Low	Uncertain	None	Low	None	None	Low	None
Total	17,557								

* Includes only a portion of the RSA.
1 Added Urban Acres 75-85.
2 Added Urban Acres 75-80.
3 Added Urban Acres 75-90.

Source: Riverside County, 208 Planning Task 10 Final Report, Table 19.

Table III-17
LAND USE FORECASTS COMPARISONS: EFFECTS OF URBAN GROWTH ON IDENTIFIED NONPOINT-RELATED WATER QUALITY PROBLEMS–
Riverside County

WATER QUALITY PROBLEM*	SCAG '76	ESRI	RIVERSIDE COUNTY GENERAL PLAN[1]	LAND USE FORECAST: JURUPA GENERAL PLAN[2]	HEMET-SAN JACINTO GENERAL PLAN[3]	SAN GORGONIO PASS GENERAL PLAN[4]	WQCP BASIN 8 FORECAST
Groundwater							
A. High TDS in Arlington, Temescal & Chino Sub-Areas	No Impact	No Impact	No Impact	No Impact	N/A	N/A	No Impact
B. High nitrates in Arlington and Temescal Sub-Areas	No Impact	No Impact	No Impact	N/A	N/A	N/A	No Impact
C. Salt balance in several groundwater basins	Adverse	Adverse	Adverse	Adverse	Adverse	Adverse	Adverse
Surface Water							
A. Lake Elsinore	No Impact	No Impact	No Impact	N/A	No Impact	N/A	No Impact
B. High TDS in Santa Ana River	Adverse	Adverse	Adverse	Adverse	N/A	Adverse	Adverse
C. Erosion and siltation in Upper Santa Ana Watershed	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact	No Impact
Other Problems							
A. Phreatophytes along Santa Ana River	No Impact	No Impact	No Impact	No Impact	N/A	No Impact	No Impact
B. Growth outstripping sewage treatment capacity	No Impact	No Impact	Adverse	Adverse	Adverse	Adverse	No Impact

* SOURCES: "Assessment of Groundwater and Surface Water Quality Problems, Riverside and San Bernardino County Portion of the Santa Ana River Basin" (Pomeroy, Johnston and Bailey, May, 1977); "Additional Ground and Surface Water Quality Problems in Riverside and San Bernardino Counties in the Upper Santa Ana River Basin" (Harvey O. Banks, Inc., April, 1977)

1 RSA's 46, 47, 49 and 51
2 RSA 45 only
3 RSA 48 only
4 RSA 50 only

NOTE: The qualitative analysis in this table considers land use forecasts alone, irrespective of planned wastewater management strategies outlined in the Basin 8 Plan.

In addition, regarding "No Impact" under items (A) and (B) above, the magnitude of the problem does not significantly change. With either urban or agricultural land use, the existing problems are still adverse in terms of meeting water quality objectives.

Source: Riverside County 208 Planning Task 10 Final Report, Table 20.

San Bernardino County.[10]

Comparison of Forecasts. Forecasts compared by San Bernardino County include SCAG-76, a Southern California Edison (SCE) forecast, an in-house County Planning Department forecast, and the forecast used in the Santa Ana Water Quality Control Plan. Table III-18 presents the comparison of population forecasts. In general, the first three forecasts are in agreement, and the Water Quality Control Plan forecast is considerably higher than any other in terms of total population in the County planning area.

For housing and employment, the SCE forecast is similar to the SCAG-76 forecast. For land use, the SCE and the Water Quality Control Plan forecasts both show more urban uses than the SCAG-76 forecast.

Preliminary Water Quality Assessment. For wastewater facilities, current deficiencies in capacity exist in RSA 28, but planned expansions of treatment facilities appear adequate to accommodate growth associated with all forecasts. Wastewater flows associated with the Water Quality Plan forecast would be about 45% greater by 1995 than flows associated with the SCAG-76 forecast. For water supply, future supplies and facilities appear to serve future growth with all the forecasts, though the effects of water conservation are uncertain. Water demand associated with the Water Quality Control Plan forecast would be 45% greater than that associated with the SCAG-76 forecast.

Table III-19 presents a qualitative rating of the extent of development on selected land types; note the extent of development on land overlying aquifers. Table III-20 presents a qualitative rating of the effects of the forecasts on selected water quality problems; adverse effects of the various forecasts are apparent for salt balance in selected groundwater basins; for high TDS in the Santa Ana River; and biostimulants in Big Bear Lake.

Preliminary Air Quality Assessment. The emissions indices for the SCAG-76, SCE, San Bernardino County Planning Department, and Santa Ana Water Quality Control Plan forecasts have been compared. The emissions indices for the first three forecasts are comparable, with the Water Quality Control Plan emissions indices being substantially higher.

Table III-18

Comparison of Population Forecasts
(Number of Residents) -
San Bernardino County

YEAR AND RSA	SCAG 1976	SO. CAL. EDISON 1974[1]	TOTAL DIF-FERENCE	PERCENT DIF-FERENCE	SCAG 1976	CO. PLANNING DEPT. INHOUSE DATA	TOTAL DIF-FERENCE	PERCENT DIF-FERENCE	SCAG 76	WQCP BASIN 8 FORECAST	TOTAL DIFFERENCE	PERCENT DIFFERENCE
RSA 28												
1975	251,316	200,295	- 51,021	- 20.30%	251,316	251,316	0	0.00%	251,316	286,021	34,705	13.8
1980	280,000	226,860	- 53,140	- 18.98	280,000	307,253	27,253	9.73	280,000	335,326	55,326	19.8
1985	307,000	253,426	- 53,574	- 17.45	307,000	330,105	23,105	7.53	307,000	384,173	77,173	25.1
1990	334,000	291,837	- 42,163	- 12.62	334,000	356,169	22,169	6.64	334,000	427,698	93,698	28.1
1995	356,000	330,247	- 25,753	- 7.23	356,000	376,871	20,871	5.86	356,000	463,465	107,463	30.2
2000	378,000	368,657	- 9,433	- 2.50	378,000	N.A.	N.A.	N.A.	378,000	491,001	113,001	29.9
RSA 29												
1975	299,019	369,784	70,765	23.67%	299,019	299,019	0	0.00%	299,019	334,651	35,635	11.9
1980	318,000	382,497	64,497	20.28	318,000	310,091	- 7,909	- 2.49	318,000	369,225	51,225	16.1
1985	338,500	395,209	56,709	16.75	338,500	329,088	- 9,412	- 2.78	338,500	403,685	65,185	19.3
1990	359,000	416,064	57,064	15.90	359,000	344,038	- 14,962	- 4.17	359,000	436,510	77,510	21.6
1995	375,000	436,919	61,919	16.50	375,000	359,071	- 15,930	- 4.28	375,000	469,181	94,181	25.1
2000	392,000	457,774	65,774	16.78	392,000	N.A.	N.A.	N.A.	392,000	503,861	111,861	28.5
RSA 30 (Portion)												
1975	9,610	6,572	- 3,038	- 31.61%	9,610	9,610	0	0.00%	9,714	21,857	12,143	125.0
1980	10,597	6,957	- 3,640	- 34.34	10,597	10,787	190	1.79	10,701	25,682	14,981	140.0
1985	11,388	7,376	- 4,012	- 35.23	11,388	11,491	103	0.90	11,501	29,539	18,038	156.0
1990	12,180	7,795	- 4,385	- 36.00	12,180	12,271	91	0.75	12,300	33,432	21,132	171.8
1995	12,789	8,214	- 4,575	- 35.77	12,789	13,082	293	2.29	12,915	37,307	24,392	188.9
2000	13,398	9,052	- 4,346	- 32.43	13,398	N.A.	N.A.	N.A.	13,530	41,214	27,684	204.6
TOTAL												
1975	559,945	576,651	16,706	2.98	559,945	559,945	0	0	560,049	642,532	82,483	14.7
1980	608,597	616,314	1,717	1.27	608,597	628,131	19,534	3.21	608,701	730,233	131,532	20.0
1985	656,388	656,011	- 337	- .06	656,388	670,684	14,296	2.18	657,001	817,397	160,396	24.4
1990	705,180	715,696	10,516	1.49	705,180	712,478	7,298	1.03	705,300	897,640	192,340	27.3
1995	743,789	775,380	31,591	4.25	743,789	749,024	5,235	.70	743,915	969,953	226,038	30.4
2000	783,398	835,483	52,085	6.65	783,398	N.A.	N.A.	N.A.	783,530	1,036,076	252,546	32.2

Source: San Bernardino County, 208 Planning Task 10 Draft Final Report, Tables 2, 4, and 6.

TABLE III-19

COMPARISON OF LAND USE FORECASTS: EXTENT OF DEVELOPMENT ON SELECTED LAND TYPES-

San Bernardino County

Forecast RSA	Added[1] Urban Acres '75-'95	Land Over-lying Aquifers	Lands with Ero-dible Soils	Aquifer Recharge Areas	Steep Slopes	Flood Plains	Wetlands Estua-ries	Forests	Agricul-tural
SO.CAL EDISON									
RSA 28	18,266	High	Uncertain	Low	Low	None	None	None	High
RSA 29	5,536	High	Uncertain	Low	Low	Moderate	None	None	High
RSA30[2]	1,493	Low	Uncertain	None	Medium	None	None	High	Low
WQCP Basin 8									
RSA 28	14,598	High	Uncertain	Low	Low	None	None	None	High
RSA 29	9,744	High	Uncertain	Low	None	Moderate	None	None	High
RSA 30[2]	3,352	Low	Uncertain	None	Low	None	None	High	Low

1. Includes residential, commercial and industrial.

2. Forecast does not include entire RSA.

Source: San Bernardino County,208 Planning Task 10 Draft Final Report, Table 25.

TABLE III-20

LAND USE FORECAST COMPARISONS: EFFECTS ON IDENTIFIED NON-POINT-RELATED WATER QUALITY PROBLEMS

San Bernardino County

Water Quality Problem	SCAG '76	WQCP BASIN 8	EDISON STUDY
Groundwater Problems			
A. Salt Balance in Sub-basins of RSA's 28 and 29	Adverse	Adverse	Adverse
B. High Nitrate Levels in Groundwater in Chino III Sub-basin, RSA 28	No Effect*	No Effect*	No Effect*
Surface Water Problems			
A. High TDS in the Santa Ana River	Adverse	Adverse	Adverse
B. Bio-Stimulants in Big Bear Lake	Adverse	Adverse	Adverse

This qualitative analysis considers land use forecasts only, and does not consider the effects of water quality strategies which may be implemented in the future as outlined in the Basin Plan.

*The magnitude of the high nitrate level problem does not significantly alter with the changes from the agricultural (dairy) uses to urban uses. With either use, the high nitrate problem is still adverse.

Source: San Bernardino County, 208 Planning Task 10 Draft Final Report, Table 26.

Ventura County [11] (Ventura Regional County Sanitation District).

Comparison of Forecasts. The forecasts compared are SCAG-76, forecasts prepared by the Ventura County Association of Governments (VCAG), forecasts appearing in the Los Angeles Rvier Basin Water Quality Control Plan Report, and forecasts appearing in the Las Virgenes-Triunfo-Malibu-Topanga Areawide Facilities Plan. No comparison of SCAG-76 and VCAG forecasts has been made due to the assumption that SCAG-76 forecasts for Ventura County are identical to "county-preferred forecasts" adopted by VCAG. The county-preferred population projections are higher than those appearing in the Basin Plan or the E-0 projections for Triunfo County Sanitation District in the areawide facilities plan, according to the disaggregation done by the Ventura Regional County Sanitation District.

Preliminary Water Quality Assessment. The differences in forecasts have implications for wastewater generation and water supply. If the county-preferred forecasts are realized, wastewater flows from Triunfo County Sanitation District will reach 2.57 mgd by 1990; this means that the existing joint powers agreement between Las Virgenes Municipal Water District and Triunfo County Sanitation District, which entitles Triunfo to a capacity of just 2.35 mgd at Las Virgenes' Tapia Reclamation Plant, would have to be modified. For water supply, imported water entitlements and local groundwater supplies appear adequate to meet demand associated with the 1990 county-preferred population forecast, though problems could be created if the supply of imported water were disrupted.

General Conclusions on the Comparison and Assessment of Growth Forecasts.

The results reviewed above should be considered quite preliminary, for two reasons. First, differences in forecasts often are caused by the time of preparation and methods and assumptions used; these are not always explicitly stated when the forecast is prepared. Second, the methodologies used for the assessments are general and qualitative, and do not allow firm conclusions that one forecast is superior to another in terms of air or water quality effects.

Nevertheless, some general conclusions can be drawn.

- SCAG-76 population forecasts either agree with or are below <u>most</u> of the population forecasts which have been compiled.

- SCAG-76 land use forecasts tend to project fewer urban acres in suburban or rural areas than <u>most</u> of the other forecasts which have been compared.

- Future growth associated with any of the forecasts will increase wastewater generation and water demand. Water supply and sewer capacity problems currently exist in some suburban and rural areas. Future growth may create additional capacity problems in growth areas if implementation of planned facilities is delayed.

- Future growth associated with any of the forecasts will occur in many places on land overlying aquifers, tending to reduce percolation to groundwater basins.

- Future growth associated with any of the forecasts will tend to worsen some of the known nonpoint source related water quality problems; this conclusion is tentative, and can be verified only though detailed water quality assessments.

- Differences in air pollutant emission indices are associated with different forecasts, but the impacts on ambient air quality cannot be determined through examining emissions indices alone.

Footnotes to Chapter III

1 SCAG. Regional Population, Housing, Employment, and Land Use Forecasts: Baseline and Range, Volumes I and II, 1977.

2 SCAG. SCAG-76 Growth Forecast Policy, 1976.

The following participating agency reports present compilations of local government demographic data in considerable detail:

- o Los Angeles County. Compilation of Population, Housing, Employment and Land Use Data. 208 Planning Task 1 Final Report, 1977.
- o Los Angeles City. Compilation of Population, Housing, Employment and Land Use Data. 208 Planning Task 1 Final Report, 1977.
- o Orange County. Compilation of Population, Housing, Employment and Land Use Data. 208 Planning Task 1 Final Report, 1977.
- o Riverside County. Compilation of Population, Housing, Employment and Land Use Data. 208 Planning Task 1 Final Report, 1977.
- o San Bernardino County. Compilation of Population, Housing, Employment and Land Use Data. 208 Planning Task 1 Final Report, 1977.
- o Ventura Regional County Sanitation District. Compilation of Population, Housing, Employment and Land Use Data. 208 Planning Task 1 Final Report, 1977.

4 The participating agency reports referenced in the following chapter on "Utility Management Systems" present demographic forecasts prepared by special purpose agencies.

5 SCAG. Regional Population, Housing, Employment, and Land Use Forecasts: Baseline and Range, Volumes I and II, 1977.

6 Information presented here is summarized from: City of Los Angeles. Comparison of PHEL Forecasts and Preliminary Assessment 208 Planning Task 14 Draft Report, 1977.

7 Information presented here is summarized from: Los Angeles County. Comparison of PHEL Forecasts and Preliminary Assessment 208 Planning Task 15 Final Report, 1977.

[8] Information presented here is summarized from: Orange County. Comparison of PHEL Forecasts and Preliminary Assessment. 208 Planning Task 15 Final Report, 1977.

[9] Information presented here is summarized from: Riverside County. Comparison of PHEL Forecasts and Preliminary Assessment. 208 Planning Task 10 Final Report, 1977.

[10] Information presented here is summarized from: San Bernardino County. Comparison of PHEL Forecasts and Preliminary Assessment. 208 Planning Task 10 Draft Report, 1977.

[11] Information presented here as summarized from: Ventura Regional County Sanitation District. Comparison of PHEL Forecasts and Preliminary Assessment. 208 Planning Task 7 Final Report, 1977.

CHAPTER IV

UTILITY SYSTEM OVERVIEW

Introduction

This chapter presents a brief overview of utility systems in the South Coast area. Separate sections review wastewater management, water supply, stormwater management and residual waste management. In addition, background information is presented on transportation and energy systems.

Wastewater Management Systems

Numerous special districts and local governments in the South Coast area provide wastewater collection, treatment, and disposal/renovation services. Table IV-1 lists the major wastewater treatment facilities currently operating in the South Coast area.

Existing and proposed wastewater systems are reviewed in this section. The review of planned systems summarizes planned wastewater facilities appearing in basin plans, as updated by more recent 201 facilities planning. The planned facilities reviewed below do not necessarily represent those that will appear in the final 208 plan.

Many facilities planning projects are currently in progress in the South Coast area. Figure IV-1 is a map of major 201 facilities planning areas in the South Coast area. Table IV-2 summarizes the status of facilities planning in the South Coast area; the information has been provided by the State Water Resources Control Board, and is current as of May, 1977.

City of Los Angeles[1]

Tributary to the City of Los Angeles wastewater treatment facilities are two separate and distinct service areas. The Hyperion Treatment Plant (HTP) service area consists of the City, excluding Watts, the "shoestring strip", and the Harbor areas; plus numerous contract agencies including the cities of Glendale, Burbank, San Fernando, Santa Monica, Beverly Hills, and El Segundo. The Terminal Island Treatment Plant service area includes the Harbor area communities of Wilmington and San Pedro. The Watts and "shoestring strip" areas are served by the Los Angeles County Sanitation Districts.

TABLE IV-1

EXISTING MAJOR WASTEWATER TREATMENT PLANTS
IN THE SOUTH COAST PLANNING AREA-1975

Operator and Name of Plant	Population Served	Capacity (mgd)	Current Average Flow(mgd)
LOS ANGELES COUNTY[a]			
Los Angeles County Sanitation Districts-Joint Outfall System	3,650,000	497.5	415.0
- Joint Water Pollution Control Plant	N/A	385.0	330.0
- Pomona Water Reclamation Plant	N/A	10.0	8.0
- Whittier Narrows Water Reclamation Plant	N/A	15.0	15.0
- San Jose Creek Water Renovation Plant	N/A	37.5	28.0
- Los Coyotes Water Renovation Plant	N/A	37.5	24.0
- Long Beach Water Renovation Plant	N/A	12.5	10.0
Las Virgenes Municipal Water District-Tapia Water Reclamation Plant	36,700	8.0	4.2
City of Burbank Water Reclamation Plant	50,000	6.0	5.7
City of Glendale-LA/Glendale Water Reclamation Plant	123,000	20.0	20.0
City of Los Angeles			
- Hyperion Treatment Plant	2,843,000	420.0	343.0
- Terminal Island Treatment Plant	113,000	30.0	20.5
Los Angeles County Sanitation Districts			
- Saugus-Newhall Water Reclamation Plant (District # 26)	39,100	5.0	3.3
- Valencia Water Reclamation Plant (District #32)	15,000	4.5	1.7
City of Avalon Treatment Plant	N/A	0.3	N/A
ORANGE COUNTY[b]			
County Sanitation Districts of Orange County - Plants No. 1 and No. 2	1,520,000	184.0	171.0
Aliso Water Management Agency			
- Laguna Beach Coastal Plant	18,000	4.0	1.8
- South Laguna Sanitary District Coastal Plant	11,400	2.5	N/A
- El Toro Water District Plant	34,900	4.0	2.1
- Los Alisos Water District Plants(2)	10,800	3.5	1.3
- Moulton Niguel Water District Plants(2)	13,600	0.8	N/A

TABLE IV-1 (Cont'd.)

Operator and Name of Plant	Population Served	Capacity (mgd)	Current Average Flow (mgd)
Southeast Regional Reclamation Agency			
- SERRA Regional Treatment Center	49,000	9.0	4.9
- Moulton Niguel Water District Plant ID-3A	5,000	0.5	0.5
- San Clemente Wastewater Reclamation Plant	25,500	4.0	2.6
- Capistrano Beach Treatment Plant	8,100	0.8	0.8
Irvine Ranch Water District Treatment Plant	34,900	7.0	3.4
SAN BERNARDINO COUNTY[c]			
Chino Basin Municipal Water District			
- Plant No. 1	143,000	16.0	13.8
- Plant No. 2	29,800	5.7	3.5
City of Fontana Plant	28,700	2.7	2.7
California Institute for Men Plant	7,900	1.2	0.8
City of Rialto Plant	25,700	4.0	2.7
City of Colton Regional Plant	26,500	2.4	2.4
City of San Bernardino-Plant No. 2	159,872	27.0	15-17
City of Redlands Regional Plant	26,680	3.0	3.0
Big Bear Community Services District/ Big Bear Lake Sanitation District	14,391	2.1	1.6
RIVERSIDE COUNTY[c]			
City of Corona Regional Plant	65,700	5.5	4.5
City of Riverside Regional Plant	151,000	26.0	18.2
Jurupa Community Service District	9,700	1.2	1.2
Edgemont Community Service District	4,200	0.5	0.4
City of Beaumont	6,500	0.8	0.6
Eastern Municipal Water District			
- Hemet/San Jacinto Plant	32,400	5.0	3.3
- Sunnymead Plant	6,700	2.0	1.0
- City of Perris Plant	4,000	0.5	0.4
- Sun City Plant	6,200	1.0	0.6
Idyllwild County Water District	1,359	0.4	0.1
March Air Force Base			
- Main Plant	3,400	1.5	0.3
- West Plant	2,000	1.0	0.2
City of Lake Elsinore Plant	4,016	0.5	0.4

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[a] Los Angeles County and Los Angeles City. Wastewater System Data Compilation and Analysis. 208 Planning Task 2 Final Report, 1977. Additional data derived from Los Angeles County Sanitation Districts Facilities Plan, Las Virgenes MWD Facilities Plan, and Work Plan for Upper Santa Clara River Basin.

[b] Orange County and NIWA. Wastewater System Data Compilation and Analysis. 208 Planning Task 1 (NIWA) and 2 (Orange County) Final Report, 1977.

[c] SAWPA. Wastewater System Data Compilation and Analysis. 208 Planning Task 2 Final Report, 1977.

TABLE IV-2

FACILITIES PLANNING STATUS, SOUTH COAST PLANNING AREA (MAY, 1977)

Agency	Step 1	Step 2	Step 3
Los Angeles County			
0896 LA City-Hyperion Sludge-Interim			7710
0899 LA Co. Engr.-Malibu Sewerage facilities - unsewered community.		7801	
0906 LACSD, No. 2-San Jose Creek Interceptor project.		7801	
1028A Las Virgenes MWD-Solids Solids handling facilities.		7801	
1028B Las Virgenes MWD Effluent disposal facilities.		7801	
1036 LA City-Hyperion Add secondary treatment facilities.		7712	
1041 LA Co. Engr.-Trancas Treatment and disposal facilities.			7709
1048D LACSD, No. 2-JWPCP Secondary Add secondary treatment facilities.		7709	
1048F LACSD, No. 2-JWPCP Secondary Add cyrogenic equipment.			7805
1048G LACSD, No. 2-JWPCP Secondary			7705
1048I LACSD, No. 2-JWPCP Secondary Add secondary treatment facilities.		7806	
1137 LACSD, No. 2-Long Beach		7712	
1146 LA City-East Valley Inter. Interceptor project.			7712
1147 LA City-Sepulveda Treatment facilities.			7712
1202 LA City-Terminal Island Effluent disposal.		7803	
1203 LA City-Hyperion Increased primary treatment capacity.		7712	7802
1204 LA City - Hyperion Effluent pumping facilities.		7712	
1205 LA City - Hyperion Modification of primary.		7710	7712
1227 LA City - Hyperion Solids handling facilities.		7709	7802
1330 Crescenta Valley CWD Effluent disposal facilities.		7802	
Orange County			
0841 Aliso Water Management Agency Regional Sewerage system.		770324	
0841B Aliso Water Management Agency Regional sewerage system		7703	7712
0841C Aliso Water Management Agency Regional sewerage system.		7706	7804
0841D Aliso Water Management Agency Regional sewerage system.			7706
0952B Santa Ana Watershed Planning Agency Interceptor project.		7712	7806
0960 Southeast Regional Rec. Authority Ocean outfall facilities.			7708
1073B Orange CSD, Plant 2			7704
1073C Orange CSD, Plant 2 Add secondary treatment facilities.			7708
1073D Orange CSD, Phase 2 Add secondary treatment facilities.		7709	
1373 Orange CSD - Brea/Carbon Canyon Treatment and transport for Sleepy Hollow.		7709	7804

NOTE: Information from State Water Resources Control Board. List represents actions taken or projected from 2/1/77 through 6/30/77. Six digit number indicates that grant for particular step has been executed and work is in progress. Four digit indicates forecast date for completion of step shown, and indicates that work is in progress for preceding step. Where more than one number is shown, work on earlier step must be completed before work on later step can begin.

Agency	Step 1	Step 2	Step 3
Riverside County			
0887A Jurupa CSD Expand treatment facilities.			7708
0887B Jurupa CSD Interceptor sewer project.		7709	
0935 Rubidoux CSD Interceptor sewer project.			7708
0976 Riverside, City of Add tertiary treatment facilities.			7709
1005 Corona, City of Areawide facilities plan.		7705	7805
1013 Eastern MWD Areawide facilities plan.	7705		
1266 Lake Elsinore, City of Interceptor sewer project.			7706
1374 San Jacinto MAWSA Sewage treatment facilities.	770310	7802	
1397 Beaumont, City of Areawide facilities plan.	770208		
San Bernardino County			
0990 Big Bear Area Reg. W.W. Agency Areawide facilities plan.			7707
1136 Chino Basin MWD-Ontario Expand treatment capacity.	7708	7710	7803
1239 San Bernardino CSD 70-S3 Sewerage facilities-Lytle Creek		7706	7804
1240 San Bernardino CSA 70-S456 Sewerage facilities-Mill Area		7708	7804
1274 San Bernardino CSA1 Waste treatment facilities.		7712	7806
1357 San Bernardino CSA No. 56 Waste treatment and transport facilities.		7710	
1371 Big Bear Reg. W.W. Agency-S.B. Interceptor sewer and collection facilities.			7707
1375 West San Bernardino CWD Interceptor sewer project.		7710	

Proposed Fiscal Year 1977-78 Planning Studies, Los Angeles Area

Agency	Study Type
Los Angeles County	
Cerritos, City of	Reclamation.
Long Beach, City - Water Dept.	Reclamation.
Los Angeles CSD	Interceptor - San Jose Creek WRP
Los Angeles CSD	Interceptor - Long Beach WRP.
Los Angeles CSD, No. 26	Effluent filters and solids handling - Saugus.
Los Angeles Co. Engineer Sanitation Division	Tertiary treatment - Camps Paige and Afflerbaugh.
Los Angeles, City of - Dept. Public Works	Wet weather flows.
Los Angeles, City of - Dept. of Public Works	Interim sludge centrate treatmen
Orange County	
Orange County Water District	Reclamation.
Orange, County of	Transport correction center wastes to regional facility.
San Clemente	Plant expansion.
Riverside County - San Bernardino County	
Eastern MWD	Effluent disposal.
Eastern MWD, Hemet-San Jacinto	Upgrade treatment or disposal.
Eastern MWD	Areawide plan - Perris Valley.
Eastern MWD	Areawide plan - Romoland.
Elsinor Valley MWD	Plant expansion.
Calif. Men's Colony, Chino	Regional system.
San Bernardino, City of	Regional plan - upgrade treatment

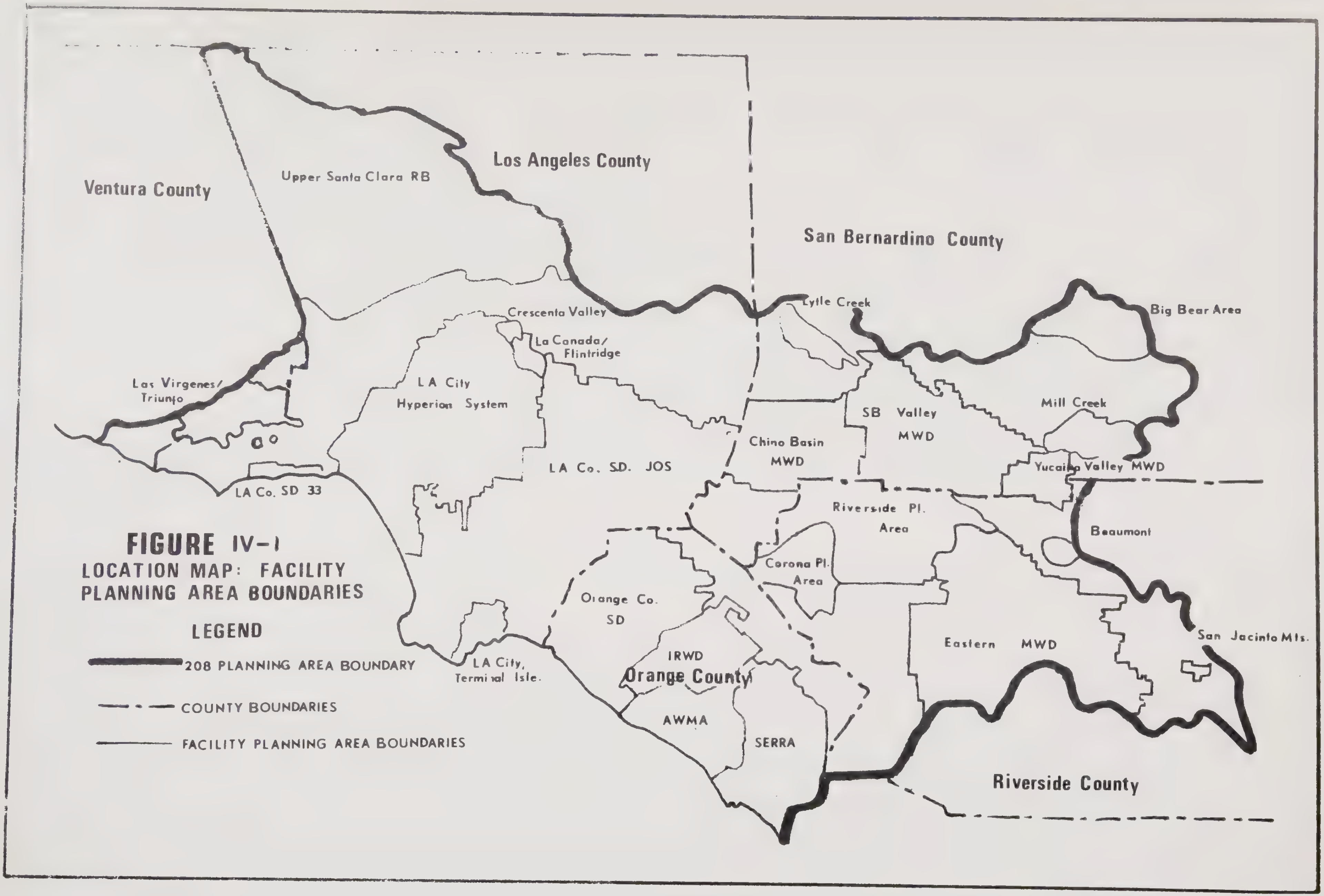


FIGURE IV-1
LOCATION MAP: FACILITY PLANNING AREA BOUNDARIES

The area of the San Fernando Valley within the HTP tributary area may be further divided into areas which are serviced by three upstream water reclamation plants. Two of these plants are currently in operation and a third is awaiting construction. The existing Burbank Water Reclamation Plant (BWRP) treats a major portion of the wastewater which is generated within the City of Burbank and also services a small area of the City of Los Angeles. The settled solids and sludge generated at this plant are returned to the collection system and ultimately processed at the HTP.

The other existing facility, the Los Angeles-Glendale Water Reclamation Plant (LAGWRP) services the extreme eastern portion of the San Fernando Valley in the City of Los Angeles, most of the City of Glendale, and the remainder of the City of Burbank. In addition, it is designed to serve the community of La Crescenta when that area is sewered. Similar to the BWRP, the settled solids and sludge generated at this facility are returned to the collection system and processed at the HTP. The proposed Sepulveda Water Reclamation Plant (SWRP) will be located in the Supulveda Flood Control Basin. The SWRP will service the western, central and northern portions of the San Fernando Valley. The solids and sludge generated at this facility will also be processed at the Hyperion Treatment Plant.

System needs for the City may be categorized as follows:

1. Required by State and Federal laws -
   (a) Full secondary treatment at HTP
   (b) Removal of sludge from the ocean
   (c) Measures to alleviate inflow and infiltration

2. Required to serve anticipated growth -
   (a) Additional treatment plant to serve the San Fernando Valley or an additional trunk sewer from the valley to HTP and additional capacity at HTP.
   (b) Expansion at Los Angeles-Glendale Water Reclamation Plant.

3. Required due to structural deterioration -
   North Outfall Sewer between Duquesne St. (Culver City) and HTP.

In addition to the foregoing needs, the City's Facilities Plan explores the issue of reclamation for use in an industrial water system and suggests a La Cienega Water Reclamation Plant.

Los Angeles County[2] and Ventura County[3] Planning Areas.

Exclusive of the City of Los Angeles, the Los Angeles basin area is largely served by the Joint Outfall System of the Los Angeles County Sanitation Districts. Additional major wastewater facilities planning areas are the Las Virgenes - Triunfo - Malibu area and the Upper Santa Clara River Basin. Each of these areas is reviewed below.

Los Angeles County Sanitation Districts. The Joint Outfall System (JOS) of the Los Angeles County Sanitation Districts (LACSD) service area generates 420 million gallons of wastewater each day. This wastewater is conveyed southerly towards the coast in large, regional trunk sewers.

Two types of facilities exist to treat the wastewater. The largest plant, Joint Water Pollution Control Plan (JWPCP) serves as the terminus for the trunk sewer system and provides advanced primary treatment followed by disposal to the open ocean 1-3/4 miles off the Palos Verdes Penninsula. Located in the City of Carson, the JWPCP receives 77% of the total system flow, or 325 million gallons per day.

Located inland at higher elevations are five Water Reclamation Plants (WRP). These plants are similar, each providing activated sludge secondary treatment with tertiary treatment (filters) now under construction. The WRP's intercept and reclaim high-quality domestic flows which originate on the system periphery. The advantage of high elevation allows gravity flow or low-lift pumping to a variety of reuse applications. The WRP's receive 23% of the total JOS flow, or about 95 mgd. About one-third, or 30 mgd, is presently reused, mainly for replenishment of underground waters. The non-reused portion of the WRP effluent is presently discharged primarily to the San Gabriel River Flood Control Channel.

The Final Environmental Impact Statement for the JOS Facilities Plan was recently released. The recommended plan includes secondary treatment, sludge treatment and disposal facilities at the Joint Water Pollution Control Plant; advanced treatment at the Pomona, Whittier Narrows and Los Coyotes Water Reclamation Plants; and additional capacity, new interceptors, and advanced treatment at the San Jose Creek and Long Beach Water Reclamation Plants.

Las Virgenes Municipal Water District/Triunfo County Sanitation District. Along the southern portion of the Los Angeles County and Ventura County boundary are three bordering jurisdictions with responsibility for wastewater collection, treatment and disposal. These are the Las Virgenes Municipal Water District (LVMWD), the Triunfo County Sanitation District (TCSD), and the Los Angeles County Sanitation District (LACSD). Triunfo County Sanitation District is wholly located in Ventura County while the others are within Los Angeles County.

LVMWD comprises an area of approximately 78,500 acres with a 1970 population of 19,000 and includes the communities of Agoura, Calabasas, Chatsworth, Lake Manor, City of Hidden Hills, Cornell, Malibu Lake, Monte Nido, Lake Lindero, and Westlake Village as well as communities in Decker, Latigo and Corral Canyons and Twin Lakes. Most of the wastewater collected within the District flows by gravity to Malibu Canyon, thence to the Tapia Water Reclamation Facility. Other wastewater is pumped or trucked to the Tapia plant from the Calabasas area and from areas outside the district.

TCSD is located in the Ventura County portion of the Malibu Creek Drainage area. This district covers 22,200 acres of primarily open space land; however, major urban growth has been underway and has occurred in scattered areas within the district.

Wastewater generated in TCSD is routed downstream to the Tapia Water Reclamation Facility for treatment. This facility was developed by a joint powers agreement between TCSD and LVMWD. Each district is entitled to share in system capacity based on its respective pro rata contribution. The joint facilities consist of the Tapia Water Reclamation Facility, a reclaimed water system, and a trunk sewer system.

LACSD has formed two sanitation districts in the service area. These are Sanitation Districts Number 27 and 33. Sanitation District Number 27 comprises a small area near the coast, adjacent to the City of Los Angeles. This District presently exports its sewage to the City of Los Angeles under contract. Sanitation District Number 33 consists of a portion of the coastal area commonly known as the Coastal Malibu. This district is presently inoperative due to the defeat of several elections to authorize sale of bonds for construction of sewage treatment facilities. The area does not have a community sewer system with the exception of five small sewage treatment plants serving a few concentrated building units and a pumped line from Pepperdine University to the Tapia Water Reclamation Facility.

The draft Final Environmental Impact Statement for the Las Virgenes MWD/Triunfo CSD has recently been released. The EIS recommends expansion of sludge handling and disposal facilities at the Tapia plant to 8 mgd and the contribution of a reclaimed water line to a nearby golf course. The issue of effluent disposal is not addressed in the EIS, and will be addressed in a future Addendum.

Upper Santa Clara River Basin. Facilities planning for the Upper Santa Clara River Basin is a joint effort by the County Sanitation District of Los Angeles County (hereinafter referred to as "Districts") and the Los Angeles County Department of County Engineer (hereinafter referred to as "County"). The County and the Districts share the authority for building and operating public facilities for the collection, treatment, and disposal of municipal and industrial wastewater within the study area. The Basin population centers, located in the lowland areas of the Santa Clara River Valley, are served by the Districts. The County serves the rural, upland communities, camps, and rehabilitation centers scattered throughout the Upper Basin.

The Santa Clara River Basin is divided into upper and lower basins by the Los Angeles/Ventura County boundary line. The study area is the Upper Santa Clara River Basin located in the northwestern corner of Los Angeles County, some 30 miles north of the City of Los Angeles.

The main population centers in the Upper Basin, Newhall, Saugus, and Valencia, are located in the low flood plain areas along the main stem of the Santa Clara River. The smaller outlying communities of Val Verde, Castaic, Gorman, Agua Dulce, Acton, Lake Hughes/Elizabeth Lake, Leona Valley and Green Valley have developed along upland canyon washes.

Approximately 67,000 people presently reside in the Upper Basin. County Sanitation Districts 26 and 32 serve a combined population of 57,000 in the Newhall-Saugus-Canyon Country-Valencia area, representing about 85% of the study area. County Sanitation District 35 includes 250 of the approximately 700 people in the sprawling community of Acton. The remaining 9,000 study area residents are located in scattered small communities, camps and rehabilitation centers throughout the Upper Basin. Wastewater treatment and disposal authority in these rural areas is vested in the County.

Areawide Sludge Management and Reclamation Studies. The Los Angeles/ Orange Metropolitan Area (LA/OMA) sludge management study is examining alternative approaches to sludge management for the Los Angeles County Sanitation Districts, County Sanitation Districts of Orange County, and the City of Los Angeles. A similar areawide study of wastewater reclamation opportunities is now being formulated with the Los Angeles County Sanitation Districts serving as the lead agency.

Orange County [4,5]

Orange County is served by the following major wastewater management agencies: County Sanitation Districts of Orange County (CSDOC), Southeast Regional Reclamation Authority (SERRA), Aliso Water Management Agency (AWMA), and Irvine Ranch Water District (IRWD). Existing and planned facilities for each are reviewed below.

County Sanitation Districts of Orange County. The County Sanitation Districts of Orange County (CSDOC) is the largest wastewater agency in Orange County. Located in the northwestern part of the county, its jurisdiction covers approximately 70 percent of the land area, including 90 percent of the population.

CSDOC is organized into seven sanitation districts, whose wastewater flows are treated by two treatment plants: Plant No. 1 located in Fountain Valley, and Plant No. 2, located in Huntington Beach. Each district constructs and operates its own interceptor sewer system to collect and transport flows to the two plants.

Plant No. 1 has an existing capacity of 46 mgd primary and 20 mgd secondary treatment. Ultimate capacity of this plant is planned for 126 mgd secondary scheduled to be completed by 1989. Incoming wastewater to Plant No. 1 flows through a complex diversion and metering structure which may divert some or all of the flow through a 96-inch interplant interceptor to Plant No. 2.

Planned disposal of the treated effluent from the joint works is through a 120-inch ocean outfall with a diffusion systems beginning four miles from the shore at a depth of 185 feet. Also maintained is a 78-inch outfall that can be used in emergencies. Plans for solids disposal at both plants include using dewatered sludge as a soil supplement or trucking to the Coyote Canyon Sanitary Landfill. At this time an ultimate sludge disposal plan is being developed.

Aliso Water Management Agency. AWMA is a single-purpose agency made up of the following sewerage districts:

- Moulton-Niguel Water District
- Los Aliso Water District
- El Toro Water District (Laguna Hills Sanitation, Inc.)
- South Laguna Sanitary District
- Emerald Bay Community Service District (EBCSD)
- Irvine Ranch Water District
- City of Laguna Beach

AWMA's jurisdiction encompasses the cities of Laguna Beach, South Laguna Beach, Emerald Bay, Moulton-Niguel - Laguna Hills area, the El Toro area, as well as Rossmoor Leisure World area. Effluent has, in the past, been discharged via a series of outfalls located at points offshore of the City of Laguna, Emerald Bay, and Aliso Beach. These are planned shortly to be consolidated into one submarine outfall near Aliso Beach.

Presently, there are six wastewater treatment facilities serving AWMA: two coastal plants, and four inland plants. The coastal plants are the Laguna Beach and the South Laguna Sanitary District (SLSD) facilities. The four inland plants include the Laguna Hills Sanitation, Inc. (LHS), the Los Alisos Water District, and the Moulton-Niguel Water District (M-NWD) 1A and 2A facilities. Current and future plans for sewage treatment within AWMA are presented in this discussion by facility.

The coastal plant at Laguna Beach serves the City of Laguna Beach and Emerald Bay. It is planned for abandonment in 1980. The other coastal wastewater treatment plant is known either as the SLSD or SCCWD facility, and is situated at the mouth of Aliso Creek. It serves South Laguna, Laguna Niguel, and part of the Moulton-Niguel Water District sewage flows. The present SLSD activated sludge plant has a capacity of 2.5 mgd with a new 4.2 mgd sewage treatment plant to be built at the site at a later date, as part of the Phase I Project of AWMA regional wastewater facility plan. The present facility will be kept operational after construction of the new facility, making a combined total capacity of 6.7 mgd available by 1978.

Two of the inland wastewater facilities - the Laguna Hills Sanitation, Inc. (LHS) plant formally known as Rossmoor Sanitation, Inc., (RSI) plant, and the Los Alisos Water District (LAWD) plant - serve the entire sewage flows from their respective districts. The LHS activated sludge plant has a 4.0 mgd capacity. The LAWD district has two facilities - 3.5 mgd activated sludge aerated lagoon facility and a 2.0 mgd conventional activated sludge plant. The 2.0 mgd facility is not currently in operation, but is planned to be reactivated when the 3.5 mgd activated sludge aerated lagoon facility is no longer able to handle the increasing wastewater flows of the district.

The remaining inland wastewater plants M-NWD 1A and M-NWD 2A serve the major portion of the Moulton-Niguel Water District's wastewater flows within AWMA. Capacities of the facilities are 0.5 mgd and 0.35 mgd respectively.

A new treatment plant with an initial capacity of 4.0 mgd is planned in the near future to replace the existing M-NWD 1A plant. An 18.2 mgd (initial capacity) solids handling plant is planned near the new treatment plant. Both of these facilities will be situated on the site of the old plant. The solids handling facility will handle the entire solids and sludge processing of the AWMA area. The future MNWD 1A Plant will treat the wastewater flows from the entire Moulton-Niguel Water District which presently flows into the SERRA system. Construction of these facilities is planned to begin by 1978.

Upon completion of this central facility, the M-NWD 2A plant will either be abandoned or used in reclaiming water for M-NWD. Its use will be determined at a later date.

To summarize, the future AWMA regional wastewater treatment plan consists of four regional facilities to treat wastewater, and one central solids handling facility to treat the entire region's solids and sludge.

Southeast Regional Reclamation Authority. SERRA is a public wastewater agency created in response to the Regional Water Quality Control Board and the State Water Resources Control Board. It is composed of:

- The City of San Juan Capistrano
- The City of San Clemente
- The Dana Point Sanitary District
- The Capistrano Beach Sanitary District
- The Moulton-Niguel Water District
- The Santa Margarita Water District

The four wastewater treatment facilities within SERRA are listed below, along with information on each plant's capacity, and the districts and cities each facility serves. The two ocean outfalls which currently serve SERRA are also included in this list, along with the future facilities: the SERRA ocean outfall and the Santa Margarita Reclamation Plant, which are planned to serve SERRA's needs.

1) The SERRA Regional Treatment Center (also known as the San Juan Capistrano Treatment Facility, 9.0 mgd capacity) treats sewage flows from San Juan Capistrano (total flow); Dana Point (total flow); M-NWD ID 3A (excess flow); and Santa Margarita (total flow).

2) The M-NWD ID 3A Reclamation Plant (0.5 mgd) reclaims 0.5 mgd wastewater. Excess flows from the district are sent to the SERRA Regional Plant.

3) The San Clemente Wastewater/Reclamation Plant (4.0 mgd) serves the City of San Clemente.

4) The Capistrano Beach Treatment Plant (0.8 mgd) treats the wastewater flow for the City of Capistrano Beach.

5) The Santa Margarita Pilot Wastewater Reclamation Plant (2.0 mgd). Santa Margarita Water District is planning to complete the construction of a 1.0 mgd Pilot Wastewater Reclamation Plant by November of 1977, and to expand the plant to 2.0 mgd by 1978. The SERRA Regional Plant currently treats the total flow from SMWD, but upon completion of the reclamation plant is planned to treat only the district's surplus flows.

6) The San Clemente Ocean Outfall (3.5 mgd). San Clemente currently discharges its effluent to the ocean via a newly built, temporary 12-inch steel outfall (9). The City of San Clemente plans sometime in the near future to abandon its use of the temporary San Clemente outfall and convey its treated wastewater effluent via a 17,000 foot, 24-inch interceptor to the Regional Treatment Center at San Juan Capistrano. From there, the effluent is planned for disposal through the future SERRA central outfall.

7) The Dana Point Outfall (9.8 mgd). All the cities and sanitation districts within SERRA, except for the City of San Clemente, discharge their treated effluent through the Dana Point outfall. Since this outfall is inadequate for the centralized usage for which it was intended, a new 57-inch diameter outfall, approximately 11,650 feet long, with a discharge depth of 120 feet is planned to replace it.

8) The SERRA Ocean Outfall (36.1 mgd) is planned to serve the entire SERRA region, including San Clemente, upon completion.

9) The Oso Trabuco Interceptor. It should be noted that the M-NWD ID 3A Plant and the future SMWD Plant do not treat their solid wastes. The Oso Trabuco Interceptor conveys the solid waste and the excess sewage flows from these plants to the SERRA regional treatment facility.

Irvine Ranch Water District. IRWD facilities consist of an activated sludge treatment plant followed by flocculation and filtration. This produces an effluent of advanced waste treatment which is used for irrigation and other miscellaneous uses in the Irvine Ranch area. Current plans call for continued activated sludge treatment followed by flocculation and sedimentation. The plant is planned to be expanded from its present 7.0 mgd capacity to 15 mgd by 1980. Further expansions are planned in 5 mgd increments to the ultimate capacity of 30 mgd.

Riverside and San Bernardino Counties [6]

Upper Santa Ana Watershed. At the present time, several municipalities discharge wastewater to the Santa Ana River. Most of these wastewaters have received secondary treatment effecting a BOD removal of up to 95 percent, essentially no removal of dissolved salts and only a very slight reduction in metals, phenols and other noxious constituent concentrations. The City of Riverside, which discharges the largest single wastewater flow to the live flow of the river, provides activated sludge and trickling filter treatment with 95 percent BOD removal. In the dry season, the flow in the river below Riverside Narrows consists of about one-half wastewater and one-half rising groundwater.

Other municipalities discharge wastewater to the Santa Ana River above Prado Dam, to groundwater precolation ponds, or to agricultural users for irrigation. Most treatments provided prior to disposal are of the activated sludge or the trickling filter type that accomplish up to 80 percent BOD removal, a slight decrease in toxic metal and oil concentrations, and an insignificant removal of dissolved salts and inorganic nutrients. Approximately 50 percent of the irrigation water is lost by evapo-transpiration and the remainder returns to surface flow or percolates to groundwater. The net result of this type of discharge is a continuing accumulation of salt in the supplies of fresh water, and insufficient control over specific constituents or compounds threatening the quality of the groundwater.

The Big Bear Lake Sanitation District (BBLSD) utilizes primary treatment followed by oxidation ponds discharging to the collection system of Big Bear City Community Services District. The BBCCSD operates as activated sludge treatment plant followed by an evaporation pond at Baldwin Lake. BBLSD ponds have, in the past, overflowed to Big Bear Lake during and after heavy storm conditions. BBCCSD ponds have discharged to Baldwin Lake due to the high flows from BBLSD. Throughout most of the year, the lake is devoid of natural inflow but during the rainy season it occasionally fills. Since this is a high-use recreation area, the present practice of wastewater discharge poses a continuing problem.

In 1970, the rate at which salts were being added to the water supply of the Upper Watershed was estimated at 158,000 tons/year. Point source waste discharges from municipal and industrial uses account for approximately 37 percent of this additional salt burden.

The disposal of toxic wastes from industries in the Upper Watershed poses a serious problem and continuing threat to the groundwater. At the present time such wastes, consisting of heavy metals and cyanides, toxic and volatile organics, oils, acids and alkalies are disposed of by several alternative methods: through the County Sanitation Districts of Los Angeles via the Chino Basin non-reclaimable waste line, for ultimate discharge to the ocean; through other municipal wastewater collection and treatment systems that discharge to surface water flow, percolation ponds or irrigation facilities; directly to surface flow or groundwater subbasins; and to land disposal sites.

San Jacinto Watershed. In 1977, there were seven sewage treatment plants in operation delivering all of the effluent to land for irrigation or percolation to groundwater. The estimated wastewater flow in 1977 was 6940 acre-feet per year. This value is projected to increase to 22,300 AF/year by the year 2000 in the Water Quality Control Plan.

Water Supply Systems

Water supply to the South Coast area is largely imported, with some reliance on local surface and groundwater supplies. Reviewed below are existing and planned water supply systems in the South Coast area.

City of Los Angeles[7]

The City of Los Angeles, which is served by the Los Angeles Department of Water and Power, has three sources of water. These are: local groundwater; imported water delivered by the Los Angeles Owens River Aqueduct from the Owens Valley and the Mono Basin; and imported water purchases from the Metropolitan Water District of Southern California (MWD).

The MWD water comes from the Colorado River and the State Water Project (SWP). During years with normal runoff, Owens Valley water comprises nearly 80% of the total City supply. Local groundwater usually comprises about 17% of the supply, and purchases from MWD comprise 3%.

Several courses of action are available during dry years to maintain a sufficient water supply for the City. Because the City's sources of supply are from four major watersheds (Mono-Owens Valley Basin, Los Angeles-San Fernando Basin, Colorado River Basin, Sacramento-San Joaquin (SWP)), the lack of water in some watersheds can be offset by drawing upon runoff from the other watershed areas. When runoff is sufficient, water would be exported from the Owens Valley-Mono Basin up to the established long-term average of 666 cfs. Local groundwaters from the Los Angeles-San Fernando Basin would also be used and can provide more than the adjudicated pumping limits for a short period. However, this water must be returned to the groundwater basin in subsequent wet years. If these two sources are unable to provide a sufficient supply, the City can then purchase additional quantities from MWD. MWD can draw from the State Water Project or the Colorado River, depending on the availability of water from each source.

The City of Los Angeles has experienced a slow population growth trend in recent years. For this reason, no major expansion programs or projects are in progress at this time. Future projects will focus on improved water supply treatment processes, and construction of wastewater reclamation plants, in addition to small expansion projects of major trunk lines.

Los Angeles County[8] and Ventura County[9] Planning Areas.

There are 161 wholesale and retail water purveyors within the portion of Los Angeles and the Eastern portion of Ventura County in the SCAG 208 Planning Area. These water purveyors consist of 23 private-investor owned water companies; 67 mutual water companies; 30 public water districts; and 41 municipal waterworks.

Except for the uninhabited areas, all of the planning area has water service provided by the retail water purveyors. The distribution systems of the purveyors are, for emergency purposes, in most cases, interconnected with adjacent systems. They are also connected to the extensive trunk line facilities of the wholesale water purveyors who provide the imported supplemental water supplies.

As of 1975, approximately 48% of the water supplies for the planning area were obtained from local groundwater basins. The remaining 52% are supplies imported from the Owens Valley, Colorado River and Northern California. To augment the existing water supplies, within the planning area, additional wastewater reclamation facilities are being proposed.

Orange County.[10]

Orange County includes more than forty cities and water service agencies. These cities and agencies are within the boundaries of either the Municipal Water District of Orange County (MWDOC) or Coastal Municipal Water District (CMWD), which serve wholesale imported water for municipal, agricultural, and ground-water replenishment purposes. Both districts are members of The Metropolitan Water District of Southern California (MWDSC) from which they obtain imported water supplies. Portions of the cities of Anaheim, Fullerton, and Santa Ana are also constituent members of MWDSC, and so are outside the boundaries of MWDOC and CMWD.

Local sources of water presently provide 23 percent of the total water supply for Orange County. Most of this local supply is accumulated Santa Ana River flows stored in the Coastal Plan groundwater basin. Those areas outside the coastal plain are nearly totally dependent upon imported water, which now provides 77 percent of total county demand.

Forecasts indicate that by year 2000 the County would be reliant upon imported water for 85 percent of total water demands. The capacities of major existing water supply facilities appear adequate to meet these future needs. Local supplies would furnish the remaining 15 percent.

Riverside and San Bernardino Counties.

The historic increase in population and the development of commercial agriculture in the Santa Ana River Basin created a demand for water that exceeded the supply from local sources several decades ago. Recent changes in land use in the Upper Watershed from agriculture use to urban and industrial use, and the relocation of agriculture to previously unused areas have increased the water demands still further. The San Jacinto Watershed is devoted largely to agricultural uses with a very slow shift to urban and industrial land uses.

Local precipitation supplies over 2.5 million acre-feet per year of water to the area, but after evapo-transpiration available local supplies amount to approximately 450,000 acre-feet. Most of this water finds its way to the groundwater subbasins, and a small fraction is diverted for direct use. Local sources supply roughly 40 percent of the total applied water requirement. Imported water at the present time accounts for another 26 percent of the total demand, and the remaining 34 percent is supplied from recycled wastewater and a long-term overdraft of some groundwater subbasins.

In the San Jacinto Watershed, water quality and quantity problems are caused by both natural factors and water requirements of farms, industries and municipalities, resulting in the necessity to reclaim a substantial fraction of wastewater. Local sources of water have not met local requirements for several decades, and the "cone of depression" developed in the Perris Subbasins (North and South) from several years of overpumping has altered the groundwater flow pattern and has allowed reservoirs of poor quality water to enter the large aquifer. The migration of this poor quality water is moving north and east and is now entering the Lakeview Sub-basin. A wide area has been experiencing water level decline rates of two to six feet per year due to this continued overpumping.

Stormwater Management Systems

Stormwater management falls under the responsibility of county flood control districts, together with various city, county, State, and Federal entities; special districts; and developers. Existing stormwater systems are reviewed below.

City of Los Angeles[12]

The City of Los Angeles is drained by the Los Angeles River, Ballona Creek (and its extension; the Arroyo de la Sacatela) and the Laguna Dominguez Channel. The City is interlaced with over one thousand miles of storm drains. Debris basins are constructed at the inlets of the majority of all the major channels in the City. Together with flood protection, conservation of water is also of prime interest to responsible agencies. This conservation is presently accomplished with the construction of retention basins and spreading grounds.

Los Angeles/Ventura County Planning Area.[13]

The Los Angeles and Ventura County portions of the South Coast area are drained by the Rio Hondo River, San Gabriel River, Los Angeles River, and Santa Clara River. Numerous storm drains, debris basins, reservoirs, and spreading grounds exist in this planning area. The U. S. Army Corps of Engineers plans and constructs the "backbone" of the drainage system. Also, to help control salt water intrusion which is prevalent in certain areas of the coastal plain, three Barrier projects (West Coast Basin, Dominguez Gap and Alamitos) were constructed by the Flood Control District in the Los Angeles City/Los Angeles County planning areas. Each of the Barrier projects consists of a series of recharging wells that are injected with fresh water that effectively blocks further intrusion.

Orange County.[14,15]

Several agencies contribute to the development of stormwater facilities in Orange County. The principal organization is the Orange County Flood Control District (OCFCD). The (EMA) Orange County Environmental Management Agency generally plans and constructs the major "backbone" system of channels, reservoirs and retarding basins. The U.S. Army Corps of Engineers has constructed three major flood control facilities in Orange County, which are maintained and owned by the Corps. The five major drainages in Orange County are the Santa Ana River watershed, the San Juan Creek Watershed, the San Diego Creek Watershed, the Aliso Creek Watershed and the Coyote Creek Watersheds.

Riverside County.[16]

The Riverside County planning area is divided into five flood control zones: the greater Riverside area (Zone 1), the Corona-Norco-Home Gardens area (Zone 2), the Elsinore area (Zone 3), the Hemet-San Jacinto-Idyllwild-Perris area (Zone 4) and the Beaumont-Banning area (Zone 5).

Each zone has its own budget and flood control facilities. All channels, reservoirs, debris basins, and most spreading grounds are operated by the Riverside County Flood Control and Water Conservation Districts. However, the Eastern Municipal Water District and Lake Hemet Municipal Water District operate their own spreading basins.

San Bernardino County.[16]

The San Bernardino County planning area is divided into three flood control zones. All channels, reservoirs, debris basins, and spreading grounds are operated by the San Bernardino County Flood Control District.

Residual Waste Management

Most of the information reviewed below is derived from County Solid Waste Management Plans.

Los Angeles City/Los Angeles County/Ventura County Planning Area.[17]

The total volume of residual wastes (excluding industrial liquids) generated in the Los Angeles County/Los Angeles City planning area is forecast to increase from about 14.9 million tons/year in 1974 to 17.4 million tons/year in the year 2000. The small portion of south Ventura County in the South Coast is forecast to increase residual waste production from 0.015 million tons/year in 1973 to 0.087 million tons/ year in the year 2000.

Major existing publicly-operated landfills (those over 100,000 tons/ year capacity) in the planning area are: Lopez Canyon (410,000 tons/year capacity), Toyon-Griffith Park (795,000 tons/year), Palos Verdes (1,300,000 tons/year), Spadra (180,000 tons/year), Mission Canyon (1,230,000 tons/year), Schol Canyon (440,000 tons/year), Calabasas (332,000 tons/year), Puente Hills (1,165,000), and Whittier City Dump (107,000 tons/year). Major landfills operated by the Los Angeles County Flood Control District are: Dalton Debris Disposal Area (164,000 tons/ year) and Santa Anita Disposal Area (196,000 tons/year). Major privately-operated landfills are: North Valley Refuse Center (550,000 tons/ year), Livingston Pit (200,000 tons/year), Penrose Pit (398,000 tons/year), Azusa-Western (271,000 tons/year), Operating Industries (589,000 tons/ year), BKK Dump (352,000 tons/year), Ascon (422,000 tons/year), Nu-Way (1,085,000 tons/year), and Landfill Associates (260,000 tons/year).

An additional 62 smaller landfill sites are also located in the planning area, and eight potential landfills are planned for the future. Forty solid waste transfer stations exist in the planning area with twenty potential transfer stations planned for the future. There is an energy recovery project currently in operation at the Palos Verdes landfill, and the City of Los Angeles has a small energy recovery operation at the completed Sheldon-Arleta landfill in the San Fernando Valley. Eight potential energy recovery projects are planned for the future.

Orange County.[18]

The total volume of residual wastes (excluding liquid) in Orange County is forecast to increase from about 5.0 million tons/year in 1980 to about 7.2 million tons/year in the year 2000. The County presently operates four major landfills: Olinda (capacity of 8.7 million tons), Coyote Canyon (6.5 million tons), Santiago Canyon (7.0 million tons), and Prima Deshecha (28.8 million tons). An additional four disposal sites are projected to be opened from 1981-1988. Three transfer stations are now operating, and a fourth is projected to be open in 1981. A potential resource/energy recovery plant is expected to open around 1990.

Riverside County.[19]

The total volume of residual wastes in the Riverside County portion of the South Coast area is forecast to increase from 0.3 million tons/year in 1995 to 0.9 million tons/year in the year 2000. The County currently operates nine landfills, the largest being Badlands (1,122,000 tons/year capacity), Lamb Canyon (1,043,000 tons/year), High Grove (610,000 tons/ year), Corona (250,000 tons/year), Double Butte (250,000 tons/year) and West Riverside (125,000 tons/year). In addition, the City of Riverside operates a landfill (425,000 tons/year), and two private landfills are in operation. No additional solid waste facilities are planned at this time.

San Bernardino County.[20]

The total volume of residual waste in the San Bernardino County portion of the South Coast area is forecast to increase from 0.7 million tons/year in 1973-1974 to 1.3 million tons/year in 1995-1996. The County currently operates six landfills, the largest being Yucaipa (465,000 tons/year capacity), Milliken (183,000 tons/year), Fontana (133,000 tons/year), and Cajon (131,000 tons/year). In addition, two city landfills and 12 private landfills are in operation. One additional landfill is planned, together with expansion of the Milliken landfill. Energy recovery is planned for the Milliken landfill and any other sites which are feasible.

Transportation and Energy

Transportation.[21]

Existing and planned transportation systems are reviewed in SCAG's 1977 Regional Transportation Plan. In addition, CALTRANS has estimated 1974 vehicle miles travelled (VMT) in the Los Angeles Regional Transportation Study (LARTS) region (slightly larger than the South Coast planning area) and has forecast 1990 VMT using the SCAG-76 forecast. In 1974, it is estimated that the average weekday VMT in the LARTS region was about 167 million vehicle miles/day; this would increase to about 188 million vehicle miles/day in 1990 given the SCAG-76 forecast.

Energy [22]

The South Coast planning are is served by the Los Angeles Department of Water and Power (Los Angeles City), Southern California Edison (most of the remainder of the planning area), San Diego Gas and Electric (south Orange County), and the cities of Glendale, Burbank, and Pasadena. The Los Angeles DWP and Southern California Edison serve the vast majority of the population in the South Coast area. The Los Angeles DWP March, 1977 forecast of commercial and industrial sales shows a growth from 11,127 gigawatt hours/year in 1975 to 23,900 gigawatt hours/year in 1995 (a gigawatt hour is one billion watt hours.) The Southern California Edison December, 1975 forecast of net sales shows a growth from 50,108 gigawatt hours/year in 1975 to 116,160 gigawatt hours/year in 1995.

Footnotes to Chapter IV

1 Information presented here is summarized from: City of Los Angeles. Wastewater Systems Data Compilation and Analysis. 208 Planning, Task 2, Final Report, 1977.

2 Information presented here is summarized from: Los Angeles County. Wastewater Systems Data Compilation and Analysis. 208 Planning Task 2 Final Report, 1977.

3 Information presented here is summarized from: Ventura Regional County Sanitation District. Wastewater Systems Data Compilation and Analysis. 208 Planning Task 2 Final Report, 1977.

4 Information presented here is summarized from: Orange County. Wastewater Systems Data Compilation and Analysis. 208 Planning Task 2, Final Report, 1977.

5 Information presented here on IRWD is summarized from: NIWA. Wastewater Systems Data Compilatlon and Analysis. 208 Planning Task 1 Final Report, 1977.

6 Information presented here is summarized from: Santa Ana Watershed Project Authority. Wastewater Systems Data Compilation and Analysis. 208 Planning Task 2 Draft Final Report, 1977.

7 Information presented here is summarized from: City of Los Angeles. Water Supply Data Compilation and Analysis. 208 Planning Task 3 Final Report, 1977.

8 Information presented here is summarized from: Los Angeles County. Water Supply Data Compilation and Analysis. 208 Planning Task 3 Final Report, 1977.

9 Information presented here on Ventura County is summarized from: Ventura Regional County Sanitation District. Water Supply Data Compilation and Analysis. 208 Planning Task 3, Final Report, 1977.

10 Information presented here is summarized from: Orange County. Water Supply Data Compilation and Analysis. 208 Planning Task 3 Final Report, 1977.

11 Information presented here is from: Santa Ana Watershed Project Authority. Water Supply Data Compilation and Analysis. 208 Planning Task 3 Draft Final Report, 1977.

12 Information presented here is summarized from: City of Los Angeles Stormwater Systems Data Compilation and Analysis. 208 Planning Task 12, Final report, 1977.

13 Information presented here is summarized from: Los Angeles County. Stormwater Systems Data Compilation and Analysis. 208 Planning Task 13 Final Report, 1977.

14 Information presented here is summarized from: Orange County. Stormwater Systems Data Compilation and Analysis. 208 Planning Task 12, Final Report, 1977.

15 Information presented on the Newport-Irvine area is summarized from: NIWA. Stormwater Systems Data Compilation and Analysis. 208 Planning Task 8, Final Report, 1977.

16 Information presented here is summarized from: Santa Ana Watershed Project Authority. Stormwater Systems Data Compilation and Analysis, 208 Planning Task 12 Final Report, 1977.

17 Information presented here is summarized from: City and County of Los Angeles. Residual Wastes Data Compilation and Analysis. 208 Planning Task 6, Final Report, 1977, (Joint Report).

18 Information presented here is summarized from: Orange County. Residual Wastes Data Compilation and Analysis. 208 Planning Task 6, Final Report, 1977.

19 Information presented here is summarized from: Riverside County. Residual Wastes Data Compilation and Analysis. 208 Planning Task 6, Final Report, 1977.

20 Information presented here is summarized from: San Bernardino County. Residual Wastes Data Compilation and Analysis. 208 Planning Task 6, Final Report, 1977.

21 Subregional aspects of transportation systems data are presented in the following reports:

- City of Los Angeles. Transportation Systems Data Compilation and Analysis. 208 Planning Task 4, Final Report, 1977.

- Los Angeles County. Transportation Systems Data Compilation and Analysis. 208 Planning Task 4, Final Report, 1977.

- Orange County. Transportation Systems Data Compilation and Analysis. 208 Planning Task 4, Final Report, 1977.

- Riverside County. Transportation Systems Data Compilation and Analysis. 208 Planning Task 4, Final Report, 1977.

- San Bernardino County. Transportation Systems Data Compilation and Analysis. 208 Planning Task 4, Final Report, 1977.

[22]Subregional aspects of energy systems data are presented in the following reports:

- City of Los Angeles. Energy Systems Data Compilation and Analysis. 208 Planning Task 5, Final Reports 1977.

- Los Angeles County. Energy Systems Data Compilation and Analysis. 208 Planning Task 5, Final Report, 1977.

- Orange County. Energy Systems Data Compilation and Analysis. 208 Planning Task 5, Final Report, 1977.

- Riverside County. Energy Systems Data Compilation and Analysis. 208 Planning Task 5, Final Report, 1977.

- San Bernardino County. Energy Systems Data Compilation and Analysis. 208 Planning Task 5, Final Report, 1977.

CHAPTER V

AIR QUALITY CONDITIONS

Introduction

Air pollution is the most commonly acknowledged major environmental problem faced by Southern California. It is crucial that water quality planning takes into account air quality impacts and constraints. This chapter presents a description of existing air quality in the South Coast planning area[1]. Information is presented for the South Coast Air Basin (SCAB), which is roughly coterminous with the South Coast 208 planning area.

Existing Air Quality Conditions

Seriousness of the Problem

While significant progress has been made in reducing high concentrations of pollutants in the South Coast Basin, air pollution remains a serious problem. Federal and State air quality standards established to protect public health are violated in many areas of the Basin. Photochemical oxidant is the most serious air pollution problem in the South Coast Air Basin where maximum oxidant readings exceed the federal air quality standard (8 pphm) by at least a factor of two. In the eastern and central portions of the Basin, the Federal standard may be exceeded by factors of four to six each year. These areas experience higher readings because they are generally downwind of the source-intensive western-central portions of the Basin and oxidant, a secondary contaminant, is formed by exposure to sunlight as hydrocarbons and nitrogen oxides are transported across the Basin.

The State and/or Federal standards for carbon monoxide, nitrogen dioxide, total suspended particulates, sulfur dioxide, sulfates and lead are also exeeded in the SCAB. Since 1973, the Federal standard for sulfur dioxide has been attained. All of the Basin has been designated by the EPA as an Air Quality Maintenance Area for the five Federally-regulated pollutants. Federal and California law require an air quality maintenance plan to be developed which provides not only for achieving State and Federal air quality standards but establishes measures to ensure that the standards will be maintained over the next twenty years.

General Meteorology

The general meteorology of the Basin is described, as follows, in the 1975 Meteorology Report of the Southern California APCD:

"With very light average wind speeds, the Los Angeles atmosphere has a limited capability to disperse air contaminants horizontally.

"Over the years 1950 to 1975, the average speed has been 5.7 miles per hour (mph) with little variability seasonally; summer wind speeds averaging slightly more than winter wind speeds. The dominant daily wind pattern is a daytime sea breeze and a night time land breeze. This regime is broken only by occasional winter storms and infrequent strong, northeasterly Santa Ana flows from the mountains and deserts north of the city.

"On practically all spring and early-summer days, most of the pollution produced during an individual day is advected from the Basin through mountain passes or dispersed aloft by the warm, vertical currents produced by solar heating of mountain slopes, the 'chimney effect'. In those seasons, the Basin can be "flushed" by a transport of ocean air of sixty miles or more during the afternoon. From late summer through the winter months, the flushing is less pronounced because of lighter wind speeds and the earlier appearance of off-shore (drainage) winds. With extremely stagnant wind flows, the drainage winds may begin near the mountains by late afternoon, after which time pollutants remain in the Basin and accumulate during the night and following day. A low average morning (6:00 a.m. to noon) wind speed is an important indicator of air stagnation potential. In Los Angeles the average morning wind speed is 5.0 mph; and 241 days per year it is equal to or less than 5.0 mph.

"The vertical dispersion of air pollutants in the Los Angeles Basin is hampered by the presence of a persistent temperature inversion in the layers of the atmosphere near the surface of the earth. Because of expansional cooling, temperature usually decreases with altitude. A reversal of this state of the atmosphere, wherein temperature increases with altitude, is termed an inversion, which can exist at the surface or at any height above the ground. The height of the base of the inversion at any given time is known as the 'mixing height.' The height can change under conditions when the top of the inversion does not change.

"Usually inversions are lower before sunrise than during the daylight hours, until the advent of the morning sea breeze that establishes a new, still lower inversion. Nevertheless, the mixing height normally increases from that point in time as the day progresses because the sun warms the ground, which in turn warms the surface air layer. As this heating continues, the

temperature of the surface layer approaches that of the base of the inversion layer. When these temperatures become equal, the inversion layer begins to erode at its lower edge. If enough warming takes place, the inversion layer becomes thinner and thinner and finally 'breaks' (when its base reaches its top); and the surface air layers can then mix upward without limit. This phenomenon is frequently observed in the middle to late afternoon on hot summer days when the smog appears to clear up suddenly."

Influence of Meteorology on Pollution

The net input of pollutants into the Los Angeles atmosphere is approximately the same every day. Pollutants enter the surface air from anywhere below the inversion base. The contaminants in the surface layers tend to diffuse into a relatively uniform mixture (in some cases higher concentrations exist immediately below the inversion base) all the way up to the mixing height, but they cannot rise through the inversion. As a result, these air pollutants become more and more concentrated unless the inversion layer lifts or is "broken," or unless surface winds are strong enough to disperse the pollutants horizontally. The combination of low wind speeds and low inversions make the condition that produces the concentrations of pollutants. On days of no inversion, or on days of strong (daily average 15 mph or more) winds, there will be no important oxidant effects, summer or winter.

In the winter, the greatest pollutant problems are carbon monoxide and oxides of nitrogen due to extremely low inversions and air stagnation which occurs during night and early morning hours. Photochemical oxidant levels are much lower during this season due to the lack of strong inversions during daylight hours and the lack of intense sunlight needed for the photochemical process.

In summer, longer daylight hours and bright sunlight combine to cause a greater reaction between hydrocarbons and oxides of nitrogen, thus producing more photochemical oxidant. Carbon monoxide is a lesser problem in summer because inversions are not as low and intense in the surface boundary layer (within one hundred feet of the ground) as in winter, and because of better horizontal ventilation in summer.

When three unfavorable factors--low inversions, low maximum mixing heights and low wind speeds -are present, air pollutants accumulate, due to greatly reduced atmospheric ventilation. Such days are called "Rule 57" days--so designated because of Rule 57, adopted by the former Los Angeles County Air Pollution Control District to regulate open burning on days when the above three factors were present. The corresponding rule of the SCAQMD is Rule 444.

The Basin may experience particularly high levels of photochemical "oxidant" if the three factors occur on days of early and continued strong sunshine. Most oxidant episodes have been recorded during May through September.

Conversely, when strong surface inversions set in on winter nights, especially near sunrise, and are coupled with only mild winds, carbon monoxide from automobile exhausts can be sufficiently concentrated near ground level to reach the carbon monoxide episode level most likely to occur during November through January.

On days when wind speeds are at least moderate, contaminants can be swept away and diluted with fresh air before they react. If a day is cloudy, the oxidant-producing reaction is slowed. Without sunlight there is no photochemical reaction. Oxidant is a negligible problem at night. Mixing of surface air may occur up to 20,000 feet or more. Conversely, the presence of low-level inversions, persisting for some time, can result in the buildup of such primary contaminants as carbon monoxide and oxides of nitrogen. These localized pollutant buildups can reach warning or episode levels.

Air Quality Monitoring System

Determination of air quality levels in the South Coast Air Basin depends upon the air monitoring system of the South Coast Air Quality Management District. The purpose of such a system is fourfold:

1. To protect the health of the public by providing a data base to support control actions;

2. To determine the quality of the air breathed by the populace;

3. To define contaminant source and receptor areas;

4. To determine air quality trends and the effectiveness of control programs.

At each air monitoring station, automatic instrumentation analyzes the air continuously for concentrations of these pollutants: ozone, nitric oxide, nitrogen dioxide, nitrogen oxides, carbon monoxide, sulfur dioxide, total hydrocarbons, methane, and soiling. Other instruments measure temperature, relative humidity, wind speed and wind direction.

Monitoring sites are selected to give the average ambient air readings in the general vicinity and are not intended to identify local "hot spots" --areas where concentrations may be reaching emergency levels. A Class A station is one established for ambient air quality surveillance and episode (emergency) determination. Class B stations serve a special purpose, such as for a limited survey, and are not part of the episode network.

There are currently 33 Class A monitoring stations in the South Coast Air Basin. The SCAQMD also maintains 8 monitoring stations in the Southeast Desert Air Basin. Monitoring stations are also maintained within the Basin by the State Air Resources Board. Data from these stations are published and available from the ARB. Again, these stations are not part of the SCAQMD episode network. The California Department of Transportation (CALTRANS) also operates mobile air monitoring stations for use in special studies.

Deficiencies remain in the Basin's data, in part because of previously non-uniform monitoring methods and equipment among the four counties which now make up the South Coast Air Quality Management District. Despite these limitations, California, and most particularly the South Coast Air Basin, is, according to EPA, the primary source of good historical data on oxidants. Within Los Angeles County there are some records at stations extending back to 1955. Increasing coordination of the air monitoring network within the Basin through establishment of uniform procedures and equipment will lead to a continually improving future data base.

Criteria for Determining Air Quality Improvements

Citing the number of days on which a standard is exceeded is a very popular way of defining air quality and is a valuable statistic. However, many other criteria can be used to indicate improvement in air quality. Before concluding that any trend is valid, the data should be evaluated in terms of several parameters:

1. Absolute concentrations at several averaging times. Generally, higher concentrations persist for shorter duration, and one of the first signs of improvement in air quality is a reduction in duration of exposure at higher concentrations, followed by a gradual elimination of the high concentrations.

2. Duration of exposure at or above several levels. Examination of contaminant behavior at several levels gives a more comprehensive picture of overall air quality. Reduction of the duration of episodes at a given level often is the first indication of air quality improvement. Duration of exposure is also important in defining dosage (see 5, below).

3. Areal distribution of exposure at different levels. This not only defines areas of high concentrations, but can, over a period of years, indicate whether the air pollution is encompassing more or less area.

4. Number of air monitoring stations involved (assuming constant number and location of air monitoring stations.) The greater the number of stations exceeding standards, the greater the problem.

5. Total population exposed to given contaminant levels. EPA points out that, "although air quality improvement should be stressed in areas of maximum concentrations and areas of highest population exposure, the goal of ultimately achieving standards should apply to all locales."

Attainment/Maintenance of Air Quality Standards

Federal law requires that an air quality standard not be exceeded more than once per year. State law does not permit even one violation. However, the Federal requirement is considered by the South Coast Air Quality Management District as more realistic because it allows for one day's malfunctioning of equipment which could account for a higher reading. By any standard of measurement, the South Coast Air Basin has not attained Federal and State air standards for most pollutants, particularly oxidants. Where trends do indicate near-attainment, longterm maintenance of these standards is unlikely without additional controls. The Air Quality Management Plan (AQMP) now under preparation by the South Coast Air Quality Management District and the Southern California Association of Governments will contain these needed measures, and set forth a timetable for attainment. If all standards are not met by 1987, Federal funding for the region, including that for sewage treatment plants, could be withheld under certain conditions.

The Basin is a designated air quality maintenance area for five major pollutants: oxidants, nitrogen dioxide, carbon monoxide, sulfur dioxide and particulates. It is currently a non-attainment area for all pollutants except sulfur dioxide. (Although the Basin now meets the one hour standard for sulfur dioxide, it does not meet the California 24-hour standard.)

Existing Emissions

The 1974 emissions inventory for the South Coast Air Basin is summarized in Figure V-1. As shown, on-road motor vehicles were the major contributor of emissions of organic gases, reactive organic gases, nitrogen oxides, carbon monoxide, and suspended particulate matter. Power plants were the major contributor of sulfur dioxide.

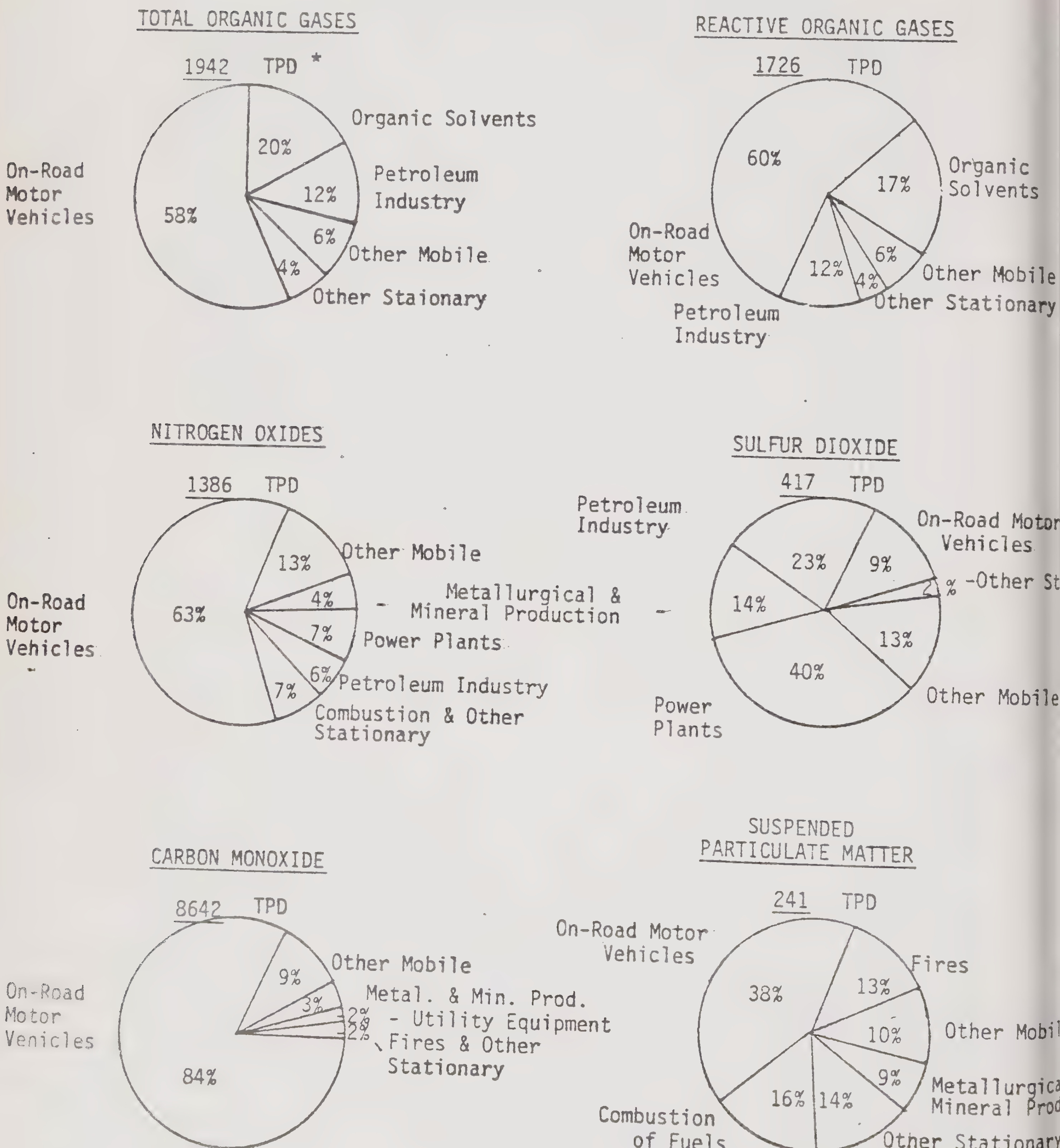
Major Industrial Sources of Air Pollution

Two categories of stationary sources of pollution stand out in any list of major emitters: power plants and refineries. However, the largest single emitter in most categories is the Basin's single steel plant. Major concentrations of point sources focus in the Harbor area and El Segundo (refineries); the coastline (power plants) and the Fontana area (Kaiser Steel). Other major emitters are located in the industrial area east of Downtown Los Angeles, the San Fernando Valley, the City of Commerce and in the Fontana-Colton area.

FIGURE V - 1

SOUTH COAST AIR BASIN

PERCENTAGE OF EMISSIONS BY SOURCE CATEGORY - 1974



* TPD= Tons per day.

Historical Trends in Air Quality

Several factors impede the ability of the South Coast Air Quality Management District to establish, with certainty, long-term air quality trends for the Basin. Although EPA requires that trend data be provided only for the years between 1972 and 1976, this short period may not be wholly representative because of possible atypical meteorological conditions or short term changes in pollution-causing activities (e.g., the energy shortage).

However, despite the presence of data in Los Angeles County extending to the early 1950's, data from the other three counties in the Basin is only recent, due to the more recent establishment of air pollution districts in these counties.

For ozone, the number of days exceeding state standards has stabilized in the 1970's at around 210 days per year. During this period there has been, however, a continuing decline in peak readings, particularly at 0.35 ppm and above. A study at Cal Tech's Environmental Quality Laboratory showed a much greater improvement between 1964 and 1975 in high level dosages (20 to 30 pphm) than low level dosages (below 20 pphm). Control strategies appear to have been much more effective at controlling high oxidant ambient concentrations, and elimination of days of 20 or 30 pphm of oxidant appears to be a realistic goal. Attainment of the Federal standards (8 pphm) will be much more difficult.

Footnotes to Chapter V

Information is summarized from: SCAG. Description of Existing Air Quality in the South Coast Area. Report 208-20a, b, 1977.

part II: Water Quality Conditions and Management Issues

CHAPTER VI

WATER QUALITY CONDITIONS

Introduction

The SCAG 208 region has many areas of current or potential water quality problems. Management of these areas involves identifying and evaluating the sources and impacts of pollution, developing control measures, and establishing monitoring and surveillance programs to attain and maintain water quality standards.

This chapter has two parts. The first discusses marine, surface, and groundwater quality in the South Coast area; the emphasis is on nonpoint sources of pollution. Water quality problems and their suspected causes are described, and possible solutions are offered.

The second part sets out "representative" and "priority" water quality problems and issues. Control programs have been designed for selected representative problems; these will be implemented in the "Early Action Program". Priority problems were ranked by three criteria: their seriousness, the fact that they were representative, and their amenability to solution in the near future. These appear in the "Priority Action Program" in which implementable solutions will be developed during Phase II of 208 planning.

WATER QUALITY CONDITIONS

Marine Water Quality[1,2,3,4]

The objectives for marine water quality are to provide beneficial uses for human needs, and to restore and maintain the environment for marine life. The waters considered here include coastal wetlands and estuaries, harbors and bays, and the near- and off-shore regions of Los Angeles and Orange counties.

Pollutants of major concern are:

(1) trace elements, such as heavy metals.
(2) organic materials, such as chlorinated hydrocarbons.
(3) petroleum wastes.

Trace metals can poison marine life at a wide range of concentrations. Chlorinated hydrocarbons (such as DDT and PCB's) and petroleum wastes also produce toxic effects.

Sources of Pollutants Affecting Marine Waters. Pollutants in the Southern California Bight come from both point and nonpoint sources. Major point sources are municipal/industrial wastes and thermal pollution discharged into nearshore ocean waters. Nonpoint pollution has four major sources:

1. Surface runoff (this includes urban and rural wastes from streams and storm drains).

   Surface runoff impacts are seasonal; the highest concentrations of pollutants occur at the start of the rainy season. Urban areas contribute primarily trace metals, hydrocarbons and other organic materials, silt, oil, grease, and COD. Agricultural runoff contributes suspended solids, animal wastes, dissolved salts, nutrients, trace metals, herbicides and pesticides.

2. Vessel wastes (these include human wastes, bilgewater, ocean dumping, residues from paint and anode corrosion).

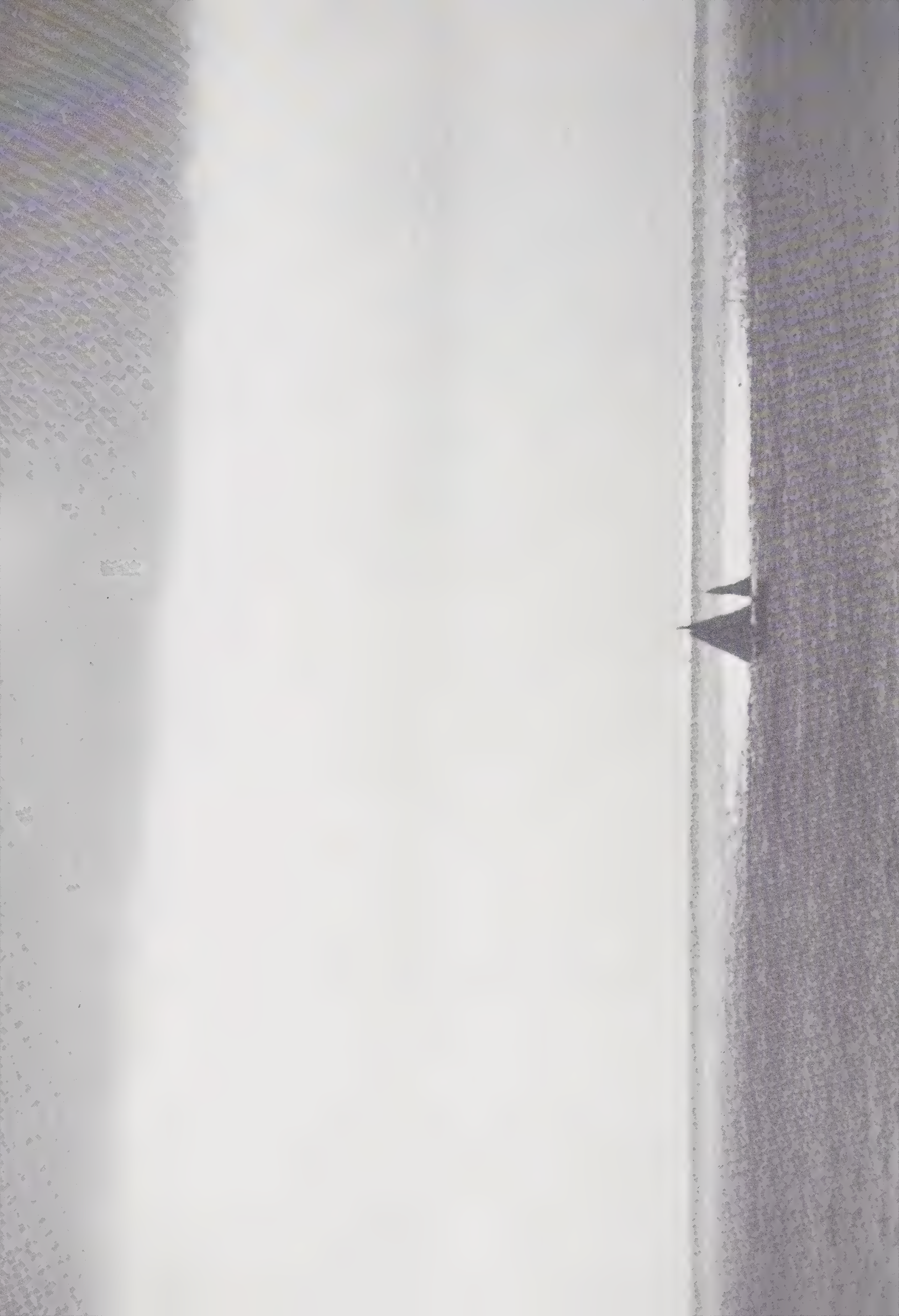
   Of primary concern in harbors and ports, vessel wastes include significant amounts of copper and zinc from anti-fouling bottom paint and anti-corrosion anodes. Ocean dumping increases trace metals and chlorinated hydrocarbon concentrations. High levels of metals are found in sediments near boatyards and storm drain discharges in Newport Bay.

3. Aerial fallout (both rainfall washout and dry fallout).

   Aerial fallout is the main supplier of lead and of DDT and PCB's into the ocean. Rainfall washout contributes copper, lead, zinc, and manganese; dry fallout adds primarily lead.

4. Wastes originating elsewhere and carried by ocean currents to the Southern California Bight.

   These may supply a significant portion of nonpoint-source pollution. However, the concentration of these pollutants may not be significant because they are spread over such a large area, especially when compared to the concentration of pollutants entering the nearshore zone from point and nonpoint sources.



Other nonpoint sources include oil seepage or spillage, erosion of cliffs and shorelines, and sewage-leaching fields.

Table VI-1 shows the average annual mass emission rates for pollutants from each of the major point and nonpoint sources to the Southern California Bight for 1971, and Figure VI-1 compares the relative percent of the pollutants.

Mitigation Measures for Marine Water Problems. As controls on municipal/industrial point sources take effect, attention will focus on mitigating pollutants from nonpoint sources. Studies of the severity and impacts of nonpoint-source water problems are being made; actual control measures are only in the early stages.

Surface runoff from urbanizing areas near the coast will probably become a more serious problem. Improved urban maintenance practices (e.g., street-cleaning programs) could alleviate the problem.

Vessel-waste pollution may become more serious over the next two decades, largely due to the increase in recreational boating. Major new legislation may be needed in this area; current laws lack adequate requirement for control facilities and enforcement mechanisms. Organic wastes and garbage from larger vessels should be less of a problem with stricter regulations covering holding tanks and pumping facilities.

Aerial fallout should improve with improved urban maintenance practices, better air-pollution controls, and reduced use of leaded fuels.

Direct impacts of pollutants on the marine environment are difficult to assess, and can be expressed only in general terms at this time. Research in this area has been expanding, and programs are being continued.

Surface Water Quality[5-12]

Surface waters include lakes, streams, rivers, creeks, lagoons and other waters exposed to the atmosphere, excluding marine waters. The major pollutants impairing surface water quality in the South Coast area are bacteria, nutrients, dissolved solids, silt, and debris.

Coliform Bacteria. Concentrations of coliform bacteria exceed standards at many public recreation waters in the region. Suspected sources of contaminants include irrigation runoff, septic tank failures, unsewered dairy wastes from feedlot drainage, industrial discharges, urban runoff, reclaimed wastewater, and wastes from livestock and from wild animals and pets.

Table VI-1 1971* average annual mass emission rates for pollutants from each of the major point and non-point sources to the Southern California Bight (SCCWRP, 1973).

CONSTITUENT	POINT SOURCES				NON-POINT SOURCES								TOTAL T/YR
	MUNICIPAL WASTEWATER		INDUSTRIAL WASTES		SURFACE RUNOFF		VESSELS		OCEAN DUMPING		AERIAL FALLOUT		
	T/YR	% OF TOTAL	T/YR	% OF TOTAL	T/YR	% OF TOTAL	T/YR	% OF TOTAL	T/YR	% OF TOTAL	T/YR	% OF TOTAL	
Volume[1]	1,380	74	251	13	242	13							1,873
TSS *	278,000	49	16,000	3	274,000[2]	48							568,000
BOD	291,000	98	6,000	2	---	--							297,000
COD	675,000	86	78,000	10	29,000	4							782,000
Oil and Grease	65,000	91	2,200	3	4,400	6							71,600
Silica	33,000	92	-- ---	--	2,800	8							35,000
Total Nitrogen	84,792	88	9,500	10	2,506	3							96,798
Inorganic Nitrogen[3]	59,929	85	9,500	13	1,419	2							70,848
Phosphate P	13,263	97	----	--	410	3							13,673
CN Cyanide	210	95	---	--	11	5							221
Phenols	1,728	85	43	2	269	13							2,040
As[4] Arsenic	20.9	93			---		1.5	7					22.4
Ag Silver	15	85			1.1	6			1.5	9			17.6
Cd Cadmium	54	78			1.2	2	0.1	0.1	14	20			69.3
Co Cobalt	3.0	14			5.3	24	-	-	14	63			22.3
Cr Chromium	649	92			25	4	1	0.1	28	4			703
Cu Copper	567	41			18	1	386	28	28	2	400	29	1,399
Hg Mercury	2.9	18			0.06	0.4	4	24	1.5	9	8	49	16.46
Ni Nickel	313	79			17	4	-	-	28	7	40	10	398
Pb Lead	211	6			90	2	10	0.3	28	0.8	3,400[5]	91	3,739
Zn Zinc	1,680	40			101	2	164	4	56	1	2,200	52	4,201
Fe Iron	6,000	19			26,000	81	-	-	280	0.9	40	0.1	32,320
Mn Manganese	102	13			183	23	-	-	28	4	480	61	793
Total DDT	19.2	54			0.119	0.3	-	-	14	40	26	6	35.32
Total PCB	9.7	22			0.246	0.6	4	9	28	64	26	5	43.95
Dieldrin	---	--			0.031	100	-	-	--	--	-	-	0.03

*Total Suspended Solids

[1] Volume is 10^6 m^3/year.

[2] Silt.

[3] Ammonia + nitrate nitrogen.

[4] Municipal wastewater value from 1974 data (SCCWRP, 1975a).

[5] Includes 2,400 metric tons/year dry fallout (Chow and Earl, 1970).

[6] Estimated dry fallout.

*Note: Table V-2 shows that municipal wastewater discharges contribute almost all of the nutrients, about half of the metals and DDT, and about one fifth of the PCB's entering the Bight from identifiable land-based sources. However, nutrients are also contributed by upwelling and by recycling within marine food chains.

Blanks in the table do not necessarily indicate no discharge but rather indicate the absence of data for the particular parameter.

1971 was the most recent year for which data from all of the sources listed was available.

Reference: City of Los Angeles, 208 Planning Task 8, Final Report, Table VIII-3. Original data from SCCWRP, 1973.

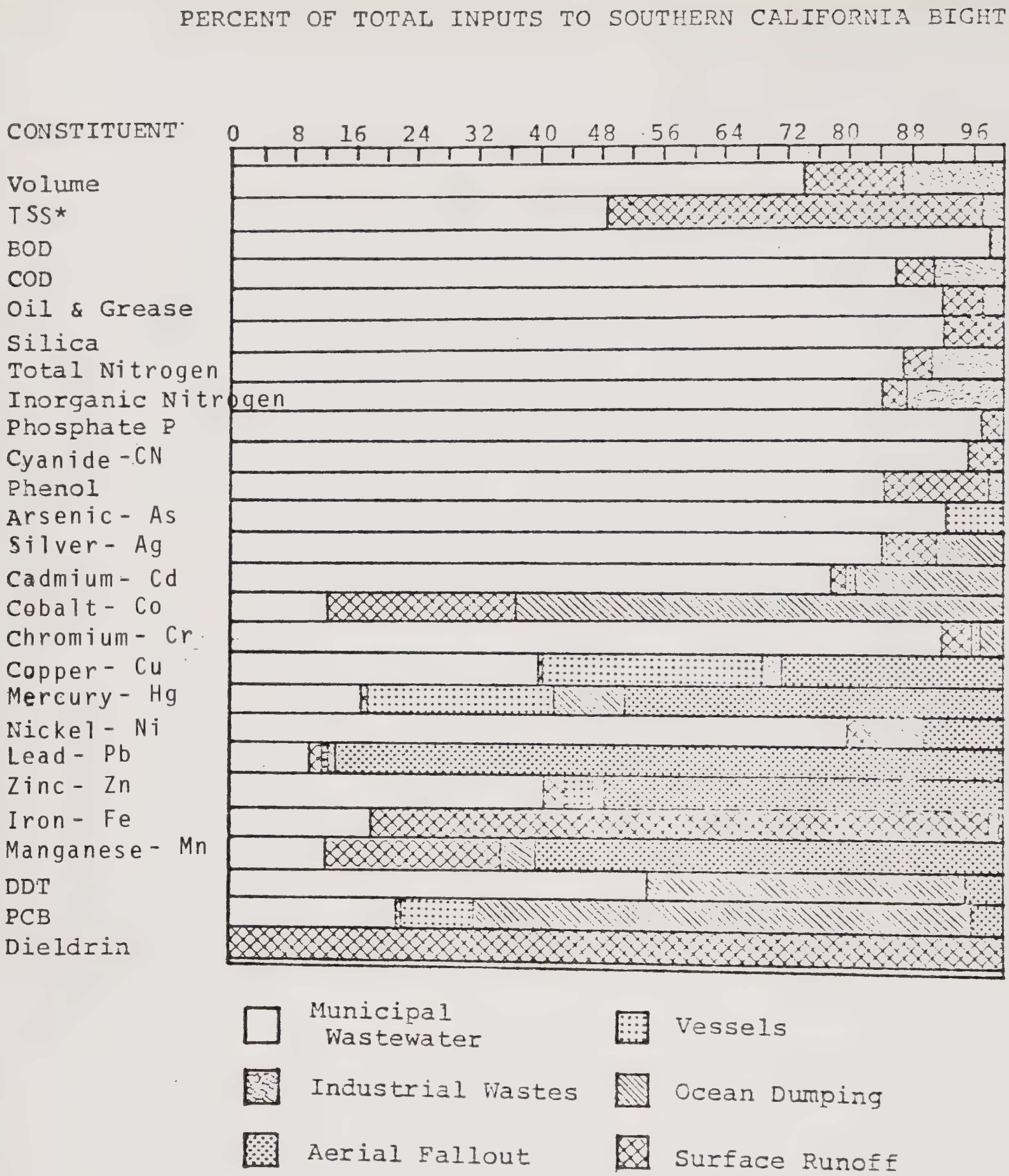


Figure VI-1 Average annual mass emission rates for pollutants from each of the major point and non-point sources to the Southern California Bight in 1971 (SCCWRP, 1973).

Reference: City of Los Angeles, 208 Planning Task 8, Final Report, Figure VIII-2. Original data from SCCWRP, 1973.

*Total Suspended Solids

Mitigation measures for bacterial contamination include: (1) enforce bacteria-count limits on upstream discharges, (2) increase control of sanitary conditions at recreation areas, (3) improve urban maintenance practices, (4) prevent failed-septic-tank discharges to watersheds, (5) manage dairy wastes, (6) continue research to identify pollution sources.

High nutrient levels can encourage phytoplankton growth to the detriment of water quality and aquatic life.

Lake Elsinore is turbid with plankton blooms, and bottom conditions are anaerobic; the lake receives nutrient-rich runoff, drainage, and leaching waters from surrounding areas. Big Bear Lake has periodic problems with algae growth. Malibu Creek is eutrophic and aesthetically damaged; the suspected causes are irrigation runoff, unsewered developments, septic tank system failures, livestock, wild animals and recreational uses. San Juan Creek has high nutrient levels from agricultural runoff and subsurface seepage; the concern here is not eutrophication but rather degradation of the overall mineral quality in the downstream course.

Newport Bay has rising nutrient levels, particularly nitrates and phosphates, and heavy growths of algae in some areas. The main source of nutrients is agricultural areas, which contribute dry-weather flows of irrigation return and storm flows of agricultural drainage. Runoff from residential areas carries lawn fertilizer. Nutrient wasteloads flowing into Newport Bay should decrease as the watershed becomes more ubanized and agriculture wanes. This, however, depends on a number of factors including irrigation practices.

Possible control measures for nutrient concentrations are specific to each body of water. Lake Elsinore would benefit from a continuous supply of water; this would help counteract the concentrating effect of evaporation. San Juan Creek needs large applications of water with low mineral content, such as a long period of moderate rainfall. Big Bear Lake and Malibu Creek must be studied further to determine the causes of their problems.

Increased mineralization. A high level of total dissolved solids (TDS) makes water unpalatable, limits its usefulness to agriculture, and impairs water used for groundwater recharge. This problem affects the Santa Ana River, the Upper Santa Clara River, the San Joaquin Marsh, Lake Elsinore, and San Juan Creek.

Runoff from dairy feedlots contributes to high TDS in the Santa Ana River; geologic factors in the Upper Santa Clara River account for much of the high TDS there. In addition, both rivers suffer from extensive pumping of groundwater, which has dried up certain reaches of their flow. Importing water with lower mineral content and better management of agricultural and dairy wastes would mitigate the problem.

Salt concentrations threaten the freshwater environment of the San Joaquin Marsh. This problem stems from high TDS inflow, mainly well water from the Irvine Ranch Water District Treatment Plant, combined with evaporation and lack of outflow. Improving the quality of the inflow and increasing the volume of outflow would improve water quality and habitat conditions in the marsh.

Erosion and siltation in mountain streams and creeks may smother aquatic habitats, discolor the water, and cause odors and debris accumulation. Natural erosion processes are severly aggravated by road-building, construction, fires, and damage to groundcover.

Groundwater Quality.[5-8,10-13]

High concentrations of total dissolved solids (TDS) and nitrate are the major concerns of groundwater-quality management in the South Coast Region. High TDS restricts agricultural and industrial uses of groundwater; excessive nitrate is linked with methemoglobinemia in babies (blue-baby syndrome).

Other groundwater problems are concentrations of calcium carbonate (hardness), carbon dioxide, iron, manganese, sulfate, sulfide, methane, boron, fluoride, and selenium. In many areas, one or more of these exceed water-quality objectives. Taste, odor, and clarity of water are often impaired.

California's drought intensified the TDS problem by limiting the availability of higher-quality water and causing more pumping of groundwater. This further lowered the groundwater table, and caused migration of high-TDS water into groundwater basins. These factors, combined with natural geologic conditions, return irrigation flows, and recharge with high-TDS imported water, have mineralized and degraded groundwater. Salt-water intrusion, leachate from sanitary landfills, upstream waste disposal, and land-use change have all added to the TDS problem.

Suspected sources of high nitrate in groundwater include irrigation return water (excessive fertilization), septic tank effluent, effluent percolated from sewage-treatment plants, leachate from sanitary landfills, and interchange between aquifers. Minor sources may include nitrates from airborne emissions and dustfall, and nitrate from decomposing vegetation. Although groundwater in many areas exceeds the U.S. Public Health Service limit for nitrate, medical problems have been few.

Sanitary landfills may have formerly raised the levels of dissolved organics, carbon dioxide, and methane in groundwaters. Regulations by the Regional Water Quality Control Boards have resulted in no recently documented cases of groundwater contamination. Carbon dioxide from decomposing organic matter tends to dissolve calcium and magnesium in the soil and cause hardness and salinity in the ground-water. High carbon dioxide makes water corrosive. Methane in the water may come from aquifers intruded by decomposition products from landfills.

Groundwater may also be polluted by liquid and solid wastes, industrial effluent, abandoned oil wells and other oil-field sources.

Many other groundwater problems are thought to have natural causes. Areas of high carbon dioxide, iron, manganese, and fluoride appear to occur naturally; selenium is leached into groundwater from the soil and from decayed plant material; sulfide contamination may be due to naturally occurring lignin and tannin.

Mitigation Measures for Groundwater Problems. Current methods of dealing with groundwater problems include:

(1) blending degraded water with good imported water to achieve acceptable quality, (2) abandoning wells that do not meet water quality objectives, (3) using high-quality imported water for drinking instead of groundwater, and (4) restricting pumping to comply with safe-yield management.

To prevent further degradation of the region's groundwater, additional studies to locate and isolate pollution sources are needed, and a continued pumping-management program is necessary to control the migration of degraded water. Hydraulic barriers, like those used in the Seawater Intrusion Barrier Project, can prevent migration. Pumping out degraded water and then spreading high-quality water for recharge may ease groundwater problems, but direct use of high-quality imported water may be more cost-effective.

Other possible solutions include: (1) managing irrigation and fertilizing practices and solid waste disposal, (2) treating groundwater before it enters domestic use, (3) treating wastewater before using it to recharge groundwater, (4) selectively drilling wells and installing casing in unaffected aquifers, and (5) eliminating septic tanks in areas where high nitrate concentrations have been correlated with the use of septic tanks.

Groundwater basins are being considered for use as underground storage reservoirs for imported or reclaimed water supplies.

Representative Water-Quality Problems for Early Action.[14-19]

Seven representative water-quality problems in the region were studied to see if solutions could be implemented in the immediate future. Four problems did not meet this criterion. They are (1) impacts of water conservation on the Hyperion Treatment Plant, (2) nutrient and sediment loads to Lake Sherwood, (3) high total dissolved solids in the groundwater above Prado Dam, and (4) nutrient flows to Orange County's Sulphur Creek Reservoir. These are briefly discussed below.

(1) The success of local water conservation programs has resulted in a stronger sewage, since there is less discarded water to carry the same amount of sewage. At the Hyperion Treatment Plant, water conservation has caused the continual failure to meet the effluent BOD standards for the five-mile ocean outfall. The most effective solution would be to increase the secondary treatment capacity; however, operational changes to Hyperion at this time would be ineffective and/or too costly. It is difficult to establish cost-effectiveness in light of Hyperion's imminent conversion to full secondary treatment.

(2) Lake Sherwood, a privately owned recreation lake, suffers from excessive algae, mosquitos, silt, and fish kills. The recent drought lowered water levels, which compounded the problem. However, the owners of Lake Sherwood have already initiated a monitoring and research program to abate the problems, independent of the 208 Program, and no further work can be done under the Early Action Program.

(3) Several groundwater sub-basins above Prado Dam contain water with excessive dissolved solids. However, the impact of any proposed physical solution has caused this matter to move much more slowly than was originally hoped and intended, and formal action will not be ready for inclusion in the Early Action Program.

(4) Sulphur Creek Reservoir in Orange County, a recreation lake which also provides flood control, is heavily eutrophic. Excessive nutrients come from several sources which include runoff from the watershed. Also, organic matter in the bottom muds of the reservoir contribute heavily to the algae problem. A combination of lake restoration and runoff control is needed to attain and maintain water quality for recreational use. Technical alternatives for dealing with the problem include source controls and reservoir management alternatives. Investigations during the Early Action Program have indicated that early solutions were not available. Several alternatives evaluated have demonstrated the need for additional engineering and lake water quality management studies. These activities are being pursued as part of the continuing planning and action program.

Early Action Program Design. The water quality problems selected for "Early Action" are described below. Alternative management strategies have been studied, and recommendations to control and abate these problems have been made. Implementation strategies have been established for each solution, and work is currently under way.

Unsewered Communities -- Los Angeles County

51 unsewered communities in Los Angeles County were identified. One community, Rhodelia Avenue, adjacent to the City of Claremont and overlying the heavily nitrate-laden Pomona Groundwater Sub-basin, meets the criteria for Early Action. Occasional septic tank overflows present a possible health hazard. Both the County Health Officer and the California Regional Water Quality Control Board, Los Angeles Region, have recommended that sewers be installed, and a majority of the community's residents petitioned for their installation. The project has been in abeyance due to a requirement for annexation to the City of Claremont, which residents did not want. Provisions under a new law (A.B. 1533) that allow for annexation without an election may move this project forward.

Sewage Sludge Management -- NIWA Area

Sewage sludge is presently disposed of by spreading and disking into the soil. However, stormflows carry pollutants from the disposal areas to Newport Bay. The Regional Water Quality Control Board has prescribed requirements for runoff-control for these sites.

The Early Action Program focuses on controlling surface runoff from those sites tributary to San Diego Creek (and Newport Bay). This can be regulated by the Regional Board, which may enforce or modify current orders at two sites, and prescribe new requirements for control of runoff at a third.

Dairy Waste Management -- Riverside and San Bernardino Counties

Dairies in the Chino Basin produce manure and wastewaters which add large amounts of salts, nitrates, and other pollutants to surface and ground waters in the Santa Ana River Basin. The large number of animals concentrated in this limited area produce more manure than can be used as fertilizer. The Early Action Program focuses on an institutional structure, controlled by the dairy industry, which could carry out a management plan. Public and private agencies are being investigated for the most effective management organization.

Priority Action Program [20]

Priority water quality problems in the South Coast area were selected and ranked by three criteria: their seriousness, their representative quality, and their amenability to solution in the near future. The problems/issues (Table VI-2) are in five categories:

(I) Surface Water Quality Protection

(II) Groundwater Quality Protection

These categories deal with the management of nonpoint and related residual point-source wasteloads which impair surface waters and groundwaters.

(III) Wastewater Management and Reclamation

This category deals with wastewater reclamation, waste treatment management in unsewered areas, and pretreatment of indirect industrial discharges.

(IV) Residual Solid Waste Management

This category deals with water quality impacts of municipal and industrial sludge management.

(V) Complex Intermedia Interactions

This category deals with relationships between air quality, water quality, and secondary impacts of waste-treatment facilities.

Table VI-2

Priority Water Quality Problems/Issues for Phase II

NOTE: Priority water quality problems and issues are those which were ranked for consideration in the "Priority Action Program."

I. Surface Water Quality Protection

Rank	Item
*1	Newport Bay
2	San Joaquin Freshwater Marsh
3	Lake Elsinore
4	Salt Creek, Basin 9
5	San Pedro Bay - Outer Long Beach/LA Harbor Area
5	Sunset/Huntington/Anaheim/Bolsa/Seal Complex
6	Nearshore Coastal Zone - 4A/4B
6	Nearshore Coastal Zone - 8
6	Nearshore Coastal Zone - 9
6	Malibu Creek and Lagoon
7	Santa Ana River Reach II, III
7	Big Bear Lake
8	Coyote Creek
9	Mountain/Foothill Streams/Lakes - Basin 4A/4B
9	Mountain/Foothill Streams/Lakes - Basin 8
9	Mountain/Foothill Streams/Lakes - Basin 9
10	San Juan Creek

II. Groundwater Quality Protection

1	Upper Santa Ana River Basin
1	Upper Santa Clara River Basin
1	Upper Los Angeles/San Gabriel River Basins
1	Coastal Aquifers: Los Angeles Coastal Plain
1	Lower Santa Ana River Basin
2	San Juan Creek Basin, Basin 9
3	Aliso Creek Basin, Basin 9

III. Wastewater Management/Reclamation

Rank	Item
* 1	Wastewater Reclamation Planning - South Coast Planning Area
* 2	Waste Treatment Management in Unsewered Areas - Problem Areas in Los Angeles County
3	Pretreatment of Indirect Industrial Discharges - Upper Santa Ana Watershed
4	Pretreatment of Indirect Industrial Discharges - South Orange County

Table VI-2 (Cont'd.)

Rank	Item
5	Waste Treatment Management in Unsewered Areas - Problem Areas in Upper Santa Ana Watershed
5	Waste Treatment Management in Unsewered Areas - Problem Areas in Orange County
6	Pretreatment of Indirect Industrial Discharges - Los Angeles County/Los Angeles City/Orange County Metropolitan Area

IV. Residual Solid Waste Management

Rank	Item
*1	Municipal and Industrial Sludge Management - Los Angeles County/Los Angeles City/Orange County Metropolitan Area
2	Municipal and Industrial Sludge Management - Upper Santa Ana Watershed

V. Complex Intermedia Interactions

Rank	Item
*1	Sewage Treatment Plant Capacity, Air Quality Maintenance, NPDES Compliance - South Coast Planning Area (Chino Basin MWD, AWMA, SERRA, others)

*Asterisked problems and issues are those which are being addressed in the "Priority Action Program."

The problems selected for "Priority Action" are described below Management strategies are currently being investigated, and control and mitigation programs will be developed by November 1978.

Problems included in the "Priority Action Program" of 208 planning are:

1. <u>Newport Bay</u>

The water quality of Upper Newport Bay, the largest and most important coastal wetland in the region, is damaged by wasteloads from urban runoff, erosion and sediment from construction sites and farms, agricultural tailwater and storm runoff, industrial-site runoff, and erosion and sediment from mountain and foothill areas. Initial investigations for control programs are examining (a) further habitat restoration and dredging, (b) urban sanitation (street sweeping) (c) erosion and grading controls, (d) vessel-waste management, and (e) control systems for stormwater sediment delivery.

2. <u>Wastewater reclamation planning in the South Coast area</u>

The policy framework for environmental, institutional, social, and economic factors affecting increased wastewater reuse will be developed for the South Coast area.

3. <u>Waste treatment management in unsewered areas in Los Angeles County</u>

Septic tanks and leach-field systems in Los Angeles County (Coastal Malibu, Topanga Canyon, and adjacent areas of the Santa Monica Mountains) are being studied for near-term mitigation measures. Possible measures include (a) septic tank and leach-field management programs, and (b) use of alternative small-scale treatment systems.

4. <u>Municipal and industrial sludge management in Los Angeles County/Los Angeles City, Orange County Metropolitan area</u>

A policy framework for municipal and industrial sludge management in the South Coast area is being developed and coordinated with the Los Angeles/Orange County Metropolitan Area Sludge Study.

5. <u>Interactions of sewage-treatment plant capacity and air quality maintenance</u>

The counties of Los Angeles, Orange, Riverside, and San Bernardino and the City of Los Angeles are developing and evaluating mitigation measures for adverse secondary air impacts associated with ongoing and future 201 plans. The effectiveness of the proposed measures is currently being studied.

Footnotes to Chapter VI

1 City of Los Angeles, 208 Planning Task 8, Final Report. Assessment of Nonpoint-related Marine Water Quality Problems Offshore Los Angeles City Area. August 1977.

2 Los Angeles County, 208 Planning Task 9, Final Report. Assessment of Nonpoint-related Marine Water Quality Problems Offshore Los Angeles County Area. July 1977.

3 County of Orange, 208 Planning Task 9, Final Report. Nonpoint-related Marine Water. September 1977.

4 Newport-Irvine Waste Management Planning Agency, 208 Planning Task 4, Final Report. Nonpoint-related Marine Water Quality Problems in Newport Bay. July 1977.

5 Los Angeles County, 208 Planning, Task 7, Final Report. Assessment of Groundwater and Surface Water Quality Problems in Los Angeles County, May 1977.

6 Los Angeles County, 208 Planning, Task 12, Final Report. Additional Groundwater and Surface Water Quality Problems. June 1977.

7 County of Orange, 208 Planning, Task 7, Final Report. Assessment of Groundwater Quality Problems in Orange County; Assessment of Surface Water Quality Problems in Orange County. May 1977.

8 County of Orange, 208 Planning, Task 12, Final Report. Compilation of Additional Groundwater and Surface Water Quality Problems in Orange County. July 1977.

9 Newport-Irvine Waste-Management Planning Agency, Task 2, Final Report. Assessment of Surface Water Quality Problems in NIWA Area. July 1977.

10 Newport-Irvine Waste-Management Planning Agency, 208 Planning, Task 7, Final Report. Compilation of Additional Groundwater and Surface Water Quality Problems in NIWA Area. July 1977.

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CHAPTER VII

NON-POINT SOURCE ASSESSMENT

Introduction

Wasteloads from nonpoint sources are of increasing concern in the South Coast region. Point source control programs, under the State Water Resources Control Board and Regional Water Quality Control Boards, have effectively reduced wasteloads from municipal and industrial discharges, but nonpoint source controls have not been so successful.

Control levels for nonpoint sources have been difficult to establish because sources are diffuse and difficult to locate precisely, the amount and types of pollutants are not well-documented, and the impact on water quality and environmental degradation is difficult to trace. For these reasons, nonpoint source management generally requires preventive management strategies to avoid potential water quality problems.

Figure VII-1 indicates point and nonpoint sources of wastes which are known or suspected to significantly influence water quality in selected water bodies in the South Coast area.

The following non-point sources are discussed in this chapter:

- Surface runoff from urban, argicultural, construction sites and mountain/foothill areas

- Aerial fallout

- Residual wastes, including municipal solid wastes, improper on-site wastewater disposal, sewage treatment sludges, industrial wastes and spills of hazardous substances

- Water supply operations affecting saline water intrusion and salt balance

- Sand and gravel mining

Figure VII-1

Selected Water Bodies in the South Coast Area

versus

Point and Non-point Sources of Pollutants

NOTE: "X" indicates a known or suspected source contributing to an existing or potential water quality problem.

	POINT SOURCES			NON-POINT SOURCES										
	Municipal Discharge	Industrial Discharge	Thermal Discharge	Urban Runoff	Rural Runoff	Agricultural Activities	Construction Activities	Recreational Activities	Septic Tanks, Unsewered Communities	Wild Fires	Oil Fields	Vessel Wastes	Saline Water Intrusion	High TDS Water Supply
SURFACE WATERS														
Big Bear Lake				X	X			X	X	X				
Coyote Creek	X	X		X		X			X					
Lake Elsinore					X	X		X	X					
L.A.-Long Beach Harbor	X	X	X	X								X		
Malibu Creek	X			X	X	X		X	X					
Mountain Watersheds					X		X	X	X	X				
Nearshore Zone	X	X	X	X	X	X					X	X		
Newport Bay	X			X	X	X	X					X		
Salt Creek					X		X							
San Joaquin Marsh														
San Juan Creek				X	X	X								
Santa Ana River	X	X		X	X	X								X
Santa Monica and San Pedro Bays	X	X	X	X							X	X		
Sunset/Huntington Harbour				X		X					X	X		
GROUNDWATERS														
Aliso Creek Basin														X
Coastal Aquifers									X				X	
San Juan Creek Basin						X			X					X
Santa Ana River Basin						X			X					X
Upper L.A./San Gabriel River Basin						X			X					
Upper Santa Clara River Basin						X					X			

Surface Runoff [1-6]

Surface runoff is that portion of rainfall (or melted snow) that flows across surfaces and eventually is returned to streams and oceans. Runoff can pick up nonpoint pollutants from the air or the land and carry them to receiving waters. During storm conditions, surface runoff is of concern from both a flood control and a nonpoint waste transport standpoint.

General sources of wastes in surface runoff include vehicles, vegetation and litter, wear products from buildings and streets, spills of hazardous materials, animal wastes, erosion sites, aerial fallout, fertilizers and pesticides and fire fighting chemicals.

An extensive precipitation and streamflow data monitoring network exists in most parts of the South Coast area. Dry weather streamflow data are also available in most locations. However, water quality data on stormflow and surface runoff are limited. Monitoring programs need to be expanded to determine accurately the origins, concentrations and mass loads of wastes carried in surface runoff. In addition, the impacts of runoff and effectiveness of alternative control and abatement measures need to be determined. This requires improving the methodology of data collection and increasing (1) the frequency of sampling, (2) the number of monitoring sites, and (3) the number of constituents to be analyzed.

In the South Coast area, the major components of surface runoff are (1) urban runoff, (2) agricultrual runoff, (3) runoff from construction sites, and (4) runoff from mountain/ foothill areas.

Urban Runoff. The South Coast area has over a million acres -- about 1560 square miles -- in urban use (Table VII-1). Accumulation of wastes during the normally dry summer on streets, rooftops and other urban surfaces is substantial. Initial storms in the fall may cause runoff to transport significant amounts of accumulated wastes to receiving waters. Water quality management is greatly concerned with this initial "flush" effect.

Major types of pollutants in urban runoff are sediment, turbidity, organic substance, BOD, trace metals (particularly lead), and pathogens. Reliable estimates of the quality and quantity of wasteloads of urban runoff are not available, although rough approximations have been attempted. Programs are now being developed to collect necessary data and to control the quality of urban runoff.

Table VII-1

Existing Land Use in the South Coast Area, 1973-75
(acres)

Planning Area	Urban	Agricultural	Open Space/ Water	Total
Los Angeles/Ventura County Planning Area	632,000	25,000	1,155,000	1,812,000
Orange County	169,000	55,000	278,000	502,000
Riverside County Planning Area	99,000	195,000	523,000	817,000
San Bernardino County Planning Area	101,000	102,000	434,000	637,000
TOTAL	1,001,000 (27%)	377,000 (10%)	2,390,000 (63%)	3,768,000

Reference: <u>Regional Population and Land Use Forecast: Baseline and Range.</u> SCAG report #208-5. Volume 1, September 1977.

The U.S. EPA report Water Quality Management Planning for Urban Runoff (EPA-440/9-75-004, December 1974) gives a procedure for estimating wasteloads from urban runoff when data on storm characteristics and physical aspects of the watershed are lacking. The suitability of the model and many of its assumptions to the South Coast area is questionable, and estimated wasteloads generated from the model must be considered as rough estimates.

The EPA model uses existing data for a number of cities distributed throughout the United States. The document provides a mean value of total solids loading expressed in lbs./curb mile/day for 19 categories of contaminants based on land use, climate, average daily traffic, landscaping, and street surface material. Other contaminants, such as nutrients, trace metals, and oxygen-demanding substances are considered to be proportional to the total solids. Street surfaces are considered to be the cause of primary pollution; runoff from non-street surfaces is considered to be unpolluted dilution water. The pollutant load on the street surface before a storm is a function of the frequency and efficiency of street-cleaning practices and length of dry period since the last storm. The amount of pollutants removed is a function of run-off flow rate and volume.

The EPA model was used to estimate urban-runoff waste loads in Orange County, including NIWA, and the Upper Santa Ana Watershed (Table VII-2). In Orange County, the model's estimates for nitrate loading were generally much lower than those based on sampling data. On the other hand, the model's estimates for phosphates (and lead in NIWA areas) were much higher than those based on sampling data. In the Upper Santa Ana Watershed, the estimated wasteload in urban runoff for a given municipality may be substantial when compared with wasteloads discharged from municipal wastewater treatment plants. Increased monitoring is needed to confirm these conclusions.

An alternative model is used to estimate annual mass emissions for various pollutants. It uses least squares linear regression to correlate constituent emission rate to streamflow rate. However, a large data base is needed to prove the model statistically valid, and a monitoring program is needed to provide a large data base. Existing data describing surface runoff wasteloads in Los Angeles City (Table VII-3) show the variation in comparable data acquired from different sources.

TABLE VII-2

Note: ( ) under each year indicates acres of urban land use.

Contaiminant	Upper Santa Ana Watershed[a] 1976 (0.79×10^4 acres)	Upper Santa Ana Watershed[a] 2000 (1.08×10^4 acres)	Orange County[b] (Non-NIWA) 1970 (11.2×10^4 acres)	Orange County[b] (Non-NIWA) 1990 (17.2×10^4 acres)	NIWA[c] 1970 (2.55×10^4 acres)	NIWA[c] 1990 (4.15×10^4 acres)
Total Solids (lbs/yr $\times 10^7$)	2.1	2.9	4.98	7.7	1.1	1.7
BOD_5 (lbs/yr $\times 10^5$)	2.5	3.4	9.8	15.3	2.2	3.4
COD (lbs/yr $\times 10^6$)	2.95	4.02	6.95	10.8	1.54	2.40
Ortho-phosphate (lbs/yr $\times 10^4$)	1.01	1.37	2.33	3.62	0.5	0.8
Total phosphate (lbs/yr $\times 10^4$)	6.23	8.47	14.6	22.2	3.2	5.0
Nitrate (lbs/yr $\times 10^4$)	1.72	2.60	4.0	6.21	0.9	1.4
Ammonia (lbs/yr $\times 10^4$)	2.46	7.62	13.1	20.5	2.9	4.5
Organic Nitrogens (lbs/yr $\times 10^4$)	5.1	14.6	14.7	22.7	3.2	5.0
Cadmium (lbs/yr $\times 10^1$)	7.4	10.5	16.9	26.2	4.0	6.0
Chromium (lbs/yr $\times 10^3$)	4.5	6.1	12.3	18.6	2.4	3.7
Copper (lbs/yr $\times 10^3$)	1.7	2.25	3.85	6.03	0.9	1.3
Iron (lbs/yr $\times 10^5$)	4.7	6.3	10.6	16.9	2.4	3.8
Lead (lbs/yr $\times 10^4$)	3.8	5.2	12.5	19.5	2.0	3.2
Manganese (lbs/yr $\times 10^3$)	8.9	12.1	20.6	32 1	5.0	7.0
Nickel (lbs/yr $\times 10^3$)	0.7	1.0	2.8	4.4	0.6	1.0
Strontium (lbs/yr $\times 10^2$)	3.2	4.3	7.5	11.6	2.0	2.0
Zinc (lbs/yr $\times 10^3$)	7.6	10.3	18.4	28.6	4.0	6.0
Total Coli (counts/yr $\times 10^{16}$)	2.4	3.2	7.26	8.7	1.25	1.94
Fecal Coli (counts/yr $\times 10^{15}$)	1.6	2.2	3.84	5.98	0.86	1.32

[a] Data from footnote 25.

[b] Data from footnote 24.

[c] Data from footnote 23.

* G. Amy, et al, Water Quality Management Planning for Urban Runoff, EPA-440/9-75-004, December 1974.

Table VII-3

ESTIMATED TOTAL MASS EMISSIONS FROM URBAN RUNOFF IN LOS ANGELES CITY

LOCATION:		BALLONA CREEK				LOS ANGELES RIVER			
YEAR:		1971–72		1974–75		1971–72		1974–75	
SOURCE:		SCCWRP	LA City	Tsai & Chen	LA City	SCCWRP[2]	LA City[3]	Tsai & Chen[2]	LA City[3]
CHARACTERISTICS:									
Total flow, ac-ft/yr		33,793	22,680	47,719	34,590	55,106	46,730	183,568	64,120
Total flow, $10^6 m^3/yr$		41.7	28.0	58.9	42.7	68	57.8	226.8	79.1
Total Suspended Solids	M tons/yr	10,800	10,607	4,410	15,065	15,200	23,799	17,330	37,762
Oil and Grease	M tons/yr	1,130	–	260.7	–	1,380	–	645.2	–
Biological Oxygen Demand	M tons/yr	–	–	–	–	–	1,355	–	–
Chemical Oxygen Demand	M tons/yr	7,100	5,480	3,570	8,396	6,400	–	7,912	–
Ammonia Nitrogen	M tons/yr	97	110.7	23.1	163.7	53	–	42.2	–
Organic Nitrogen	M tons/yr	229	–	90.1	–	309	–	348.5	–
Nitrate Nitrogen	M tons/yr	181	38.1	–	57.6	218	–	–	–
Silicate	M tons/yr	670	–	1,180	–	86	–	4,750	–
Phosphate	M tons/yr	50	31.9	34.8	48.7	85	–	294.9	–
Chloride	M tons/yr	–	–	29,280	–	–	–	47,470	–
Mercury	kg/yr	–	–	–	–	34	21.69	68.05	29.12
Cadmium	kg/yr	100	688	564.2	1,045.6	270	3,066	1,072	3,127
Chromium	M tons/yr	3.90	1.01	11.92	1.55	2.4	2.07	5.08	2.88
Copper	M tons/yr	1.80	1.68	3.12	2.57	3.1	6.99	7.95	8.81
Iron	M tons/yr	270	207.3	54.94	296.5	9,400	317.94	160.43	393.43
Nickel	M tons/yr	1.10	1.12	2.95	1.71	2.2	5.09	97.16	6.67
Lead	M tons/yr	20	25.58	6.42	37.0	30	16.04	18.01	22.35
Zinc	M tons/yr	17	16.26	6.60	26.0	27	23.87	20.25	28.19
Silver	kg/yr	350	515.0	–	697.8	80	523.6	–	682.3
Cobalt	kg/yr	120	99.9	–	152.7	460	–	–	–
Manganese	M tons/yr	6	2.23	–	3.35	19	20.0	–	26.6
Selenium	kg/yr	–	–	–	–	–	1,054	–	1,700
Arsenic	kg/yr	–	–	–	–	–	723.5	–	1,076.5
Total DDT	kg/yr	18.1	9.7	–	45.6	60	47.1	–	61.2
Total Polychlorinated Biphenyls	kg/yr	15.1	28.2	–	40.4	170	–	–	–
Total Dieldrin	kg/yr	8.8	–	–	–	8.8	–	–	–

1. Ballona Creek at Sawtelle Boulevard, West Los Angeles, California.
2. Los Angeles River at Willow Street, Long Beach, California.
3. Los Angeles River at the Pasadena Freeway, Los Angeles, California.

Reference: City of Los Angeles, 208 Planning, Task 9, Final Report, October 1977, Table 10.

Agricultrual Runoff. Approximately 375,000 acres in the 208 South Coast planning area are in agricultrual use (Table VII-1). Pollutants which can originate from agricultural sources include salts, nutrients, biocides, oxygen demanding substances, sediment, trace metals and pathogens. In the Upper Santa Ana Watershed (Riverside and San Bernardino Counties 208 planning areas), salinity is the major water quality problem caused by agriculture, followed by BOD, sediments and pathogens. In Orange County, the principal agricultrual pollutant is sediment caused by sheet erosion and possibly nutrients.

Estimated wasteloads in agricultural runoff in the Upper Santa Ana Watershed (Table VII-4) are based on acreage projections from the Basin Plan and five categories of land use: (1) dairies and feedlots, (2) citrus, (3) vineyards, (4) row crops, and (5) hay, pasture, and field crops. Projected wasteloads from dairies, horses, and poultry increase over the next 20 years, while pollution from irrigated agriculture diminishes.

The Universal Soil Loss Equation was used to estimate unit rate of annual sediment-load from erosion per acre in agricultural areas of Orange County. The cropping patterns used in the analysis are orchards, row crops, and grazing land. The unit rate was used to calculate the sediment-load from the total agricultural area for each watershed (Table VII-4). Future wasteloads will correspondingly lessen as agriculture in Orange County is reduced.

Construction Site Runoff. Sediment from construction sites, carried by runoff to the water bodies, is the major pollutant from construction activities. Other pollutants, such as oil, grease, nutrients and pesticides, adhere to the sediment and are carried along.

The makeup and amount of surface runoff from a construction site depend on precipitation, land characteristics, and building practices. The data needed to estimate runoff from construction activities are insufficient. The volume of sediment from construction activities has not been segregated from the total sediment load.

Table VII-4

Estimated Wasteloads from Agricultural Runoff for 1975 and 1995
(tons/year)

Location	1975			1995		
	Acreage	TDS	Sediments	Acreage	TDS	Sediments
Riverside and San Bernardino Counties[a]						
Upper Santa Ana River	110,260	69,160		67,910	49,070	
San Jacinto	38,620	10,300		36,150	12,550	
Orange County						
Lower Santa Ana River[b]	6,330		7,090	2,530		2,830
San Juan Creek[b]	34,300		45,500	27,400		34,200
Coastal Drainage[b]	6,000		17,300	2,400		6,900
San Diego Creek[c]	20,040		12,860	9,380		5,380

[a] Data from footnote 5.

[b] Data from footnote 4.

[c] Data from footnote 3.

The estimated sediment wasteloads from construction activities in Orange County, based on the Universal Soil Equation and SCAG-76 growth projections, assume a uniform growth rate for the next 20 years and no erosion control measures:

Watershed	Acres of Open Land	Sediment Delivery Ratio	Ultimate Sediment Yield	Ultimate Receiving Water Body
San Juan Creek	1500	8.5%	3,642 tons/yr.	Pacific Ocean
Lower Santa Ana	1500	9.0%	691 "	Pacific Ocean
San Diego Creek	800	8.0%	409 "	Upper Newport Bay

In the Upper Santa Ana Watershed, sediment wasteloads are estimated from background runoff data and projected land-use changes. For this watershed, the normal erosion level is estimated to be about 1.9 million tons per year; the additional contribution from construction sites ranges from 212,000 to 257,000 tons per year -- about 12% of the normal erosion level.

In Los Angeles City and other parts of Los Angeles County, erosion control measures and grading ordinances appear effective in reducing sediment loads from construction activities.

Mountain/Foothill Runoff. During storm conditions, large amounts of sediment can be eroded from streams in the mountain and foothill areas. These sediments are carried along through drainage channels until they are deposited in the nearshore zone at the mouth of the channels. In enclosed wetlands and estuaries, these excessive deposits of sediments are a threat to the aquatic environment. Control measures such as debris dams and retention basins are partially effective but increased monitoring is needed to determine accurately the sediment wasteloads.

Aerial Fallout[1-6]

Airborne heavy metals, biocides, and nutrients are contributed to a watershed area in three ways: dry deposition of suspended particulates, dry deposition of atmospheric aerosol, and wet depositon. In wet depositon, raindrops scavenge aerosol and gases from the air and carry them to the ground. Part of the rainfall then becomes surface runoff, adding urban litter as well as aerosol and gaseous products deposited on the surface during dry weather to the pollutant stream. Jet ash fallout and washout may be an important nonpoint source near airports.

Data indicate that high concentrations of copper, lead, manganese, nickle, and zinc are present in rainwater. For lead, the dry fallout rate is about 2-1/2 times that from rainfall washout. Estimated mass emission rates of zinc and lead into the ocean from the San Diego Creek and Santa Ana Delhi Watersheds are 6 tons/year and 6.5 tons/year respectively. In the interconnected impervious area of the upper Santa Ana Watershed, estimated aerial-fallout wasteloads for 1976 are 16 tons/year for iron, 0.7 tons for lead and 0.8 tons for zinc; the combined wasteload of nitrite, nitrate, and ammonia is nearly 38 tons/year. (Data on nutrient contributions from aerial fallout to surface runoff are very limited.)

The annual dry fallout of chlorinated hydrocarbons to the Southern California Bight has been estimated to be 2.2 tons of DDT and 2.2 tons of PCB.

Residual Wastes[7-11]

Residual wastes -- the end product of waste-processing operations and of resource utilization -- include municipal solid wastes, on-site wastewater disposal systems (unsewered communities), sewage treatment sludges, industrial wastes and hazardous wastes.

Solid waste disposal. Disposal of solid wastes to refuse p its, dumps and landfills may contaminate local groundwater and surface water supplies through percolation of leacheate or by runoff erosion. Regulatory control of land fill sites by the Regional Water Quality Control Boards has been effective in controlling such pollution. No documented cases of leachate contamination of ground or surface waters exist, and all improper disposal sites have been eliminated.

Unsewered communities. Overflows and seepage from septic tanks, cesspools, and leaching fields endanger surface and groundwater quality. Failures of private disposal systems may cause bacterial and viral contamination and very high nitrate concentrations.

In the Upper Santa Ana Watershed, there are 15 unsewered communities that could potentially pollute ground or surface waters. The Regional Water Quality Control Board has prohibited four of these from continuing underground waste disposal after a given date unless an acceptable disposal method is approved. Most unsewered communities have established plans for resolving water-quality problems; problems in some unsewered communities near population centers are not being resolved as fast as scheduled in the Basin Plan because of conflicting policies, lack of agreement, grant regulations, or institutional problems.

In Los Angeles County, most of the developed area has adequate sanitary sewer systems, but some scattered developed communities still rely on private sub-surface sewage-disposal systems. Fifty-one unsewered areas in the county, excluding Los Angeles City, are identified as potential problem areas.

In Los Angeles, about 3.4% of the housing units, primarily located in mountainous and undeveloped areas in the northern half of the city, are not connected to the city's sewage system. The City of Los Angeles's master plan proposes wastewater facilities and systems for intercepting and treating unsewered flows, and connecting all new subdivisions to the public sewer systems.

Sewage treatment sludges. Sludges in the South Coast area are disposed of on nearby farmlands, or dried and sold as soil additives, or hauled to a dump, or discharged to the ocean. The State Ocean Plan will ultimately halt all ocean-outfall discharges of solids; thus there will be increased land disposal of processed sludges or increased resource recovery in the future.

Hazardous substances. Increasingly stringent restrictions on disposing of hazardous wastes by sewer system and ocean outfall will probably lead to more use of landfills for their final disposal. Accidental or indiscriminate spills of hazardous substances occur periodically. Generally effective controls exist; however, improvements for clean-up and containment are necessary.

Saltwater Intrusion[7-11]

Nine South Coast groundwater basins are subject to saltwater intrusion. In many cases, extensive use of these basins for municipal, industrial, and agricultural water supplies has lowered groundwater levels and allowed saltwater intrusion into the freshwater aquifiers.

Los Angeles County's West Coast Basin and Central Basin are subject to saltwater intrusion. The West Coast Basin is most affected; over 50 years ago, the entire coastal perimeter was infiltrated by seawater and many wells were abandoned. Major programs have halted saltwater intrusion into these basins. Freshwater-injection barriers counteract the flow of saltwater into the basins, and groundwater extractions are being controlled.

In Orange County, saltwater intrusion is a serious problem at the Santa Ana (Talbert) Gap and the Los Alamitos Gap, which affect the East Coastal Plain Pressure Area Basin and the West Coast Basin, respectively. The current Orange County Coastal Water project effectively controls the intrusion in the Santa Ana Gap. But ongoing monitoring indicates that the Los Alamitos Barrier Project needs improvement, extension, or both.

Sand and Gravel Mining[7-11]

Orange County has 16 locations where sand and gravel extraction, rock crushing, concrete mixing, and cement manufacture are carried on. Water used to wash silt and clay from the sand and gravel is then stored in a pond and reused after the silt settles out. There is no regular discharge of wastewater from these sites, but the silting and storage ponds are not lined, and washwater and equipment wastes could percolate and contaminate the groundwater.

Pollution from these sources, while not very serious, should be studied so that corrective measures -- inspections, enforcement of NPDES discharge requirements, and flood control protection -- may be taken to minimize any threat.

Footnotes to Chapter VII

1 City of Los Angeles 208 Planning, Task 9, Final Report. Surface Runoff Wasteload Assessment in Los Angeles City Area. October 1977.

2 Los Angeles County, 208 Planning, Task 10, Final Report. Surface Runoff Wasteload Assessment in Los Angeles County Area. July 1977.

3 Newport-Irvine Waste Management Planning Agency, 208 Planning, Task 5, Final Report. Surface Runoff Wasteload Assessment in NIWA Area. July, 1977.

4 County of Orange, 208 Planning, Task 10, Final Report. Surface Runoff Wasteload Assessment Orange County Area. July 1977.

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6 Ventura Regional County Sanitation District, 208 Planning, Task 4, Final Report. Water Quality and Surface Runoff Wasteload Assessment for Lake Sherwood. August 1977.

7 City of Los Angeles, 208 Planning, Task 10, Final Report. Assessment of Other Nonpoint Sources in Los Angeles City. Parts 1, 2 and 3, September 1977.

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CHAPTER VIII

WATER QUALITY MANAGEMENT ISSUES

Introduction

An issue is defined as "a point in question or a matter in dispute or under discussion". There are many complex and controversial issues involved in areawide waste treatment management planning. This chapter lists summary statements of major water quality issues.

The issue statements initiate the process of areawide policy development; as the 208 Program progresses, alternative policies will be developed to address each issue, and policies will then be selected for inclusion in the 208 Plan. These policies will establish a context and a set of guiding pricniples for the development and implementation of the 208 Plan.

Many water-quality management issues have been discussed in detail in a previous SCAG report, *Priority Water Quality Problems and Issues for Phase II Planning (208-6)*. The purpose of that report was to select water quality problems and issues for which solutions can be developed and implementation plans adopted within the two-year planning period, for use in the "Priority Action Program" of SCAG's 208 planning process. This chapter lists the issues described in the above-mentioned report, plus additional major issues, for use in the "Comprehensive Policy Program" of SCAG's 208 planning process. This program will address the full range of water quality problems and issues in the South Coast area through development of an implementable policy framework for water quality management.

Issue statements are presented below for the following areas: water quality management framework; land use, water quality, and air quality; point source controls (municipal and industrial waste treatment); nonpoint source controls; and water conservation and reclamation.

Water Quality Management Framework

Areawide policies are needed for the following issues:

Issue # 1: INSTITUTIONAL ARRANGEMENTS AND MANAGEMENT SYSTEMS FOR AREAWIDE WATER QUALITY MANAGEMENT.

Issue # 2: AN AREAWIDE WATER QUALITY MANAGEMENT STRATEGY INTEGRATING POINT AND NONPOINT SOURCE PLANNING AND CONTROLS.

Issue # 3: COORDINATION OF WATER QUALITY RESEARCH AND MONITORING ACTIVITIES WITH WATER QUALITY MANAGEMENT PLANNING.

Issue # 4: PREVENTIVE AND PROTECTIVE APPROACHES TO WATER QUALITY MANAGEMENT WHICH MINIMIZE THE ENTRY OF POLLUTANTS TO RECEIVING WATERS.

Land Use, Water Quality and Air Quality

Areawide policies are needed for the following issues:

Issue # 5: PREVENTING AND CONTROLLING NONPOINT SOURCES OF POLLUTION THROUGH LAND USE PLANNING AND CONTROL.

Issue # 6: PROTECTION OF ENVIRONMENTALLY SENSITIVE LANDS TO PREVENT WATER QUALITY PROBLEMS, INCLUDING PROTECTION OF LAND OVERLYING AQUIFERS FOR RECHARGE PURPOSES.

Issue # 7: CONSISTENCY OF WASTEWATER MANAGEMENT PLANNING WITH AREAWIDE GROWTH POLICIES AND DEMOGRAPHIC PROJECTIONS.

Issue # 8: MITIGATION OF GROWTH-RELATED AIR IMPACTS OF MUNICIPAL WASTEWATER MANAGEMENT.

Point Source Controls (Municipal and Industrial Waste Treatment

Area wide policies are needed for the following issues:

Issue # 9: FEDERAL AND STATE DISCHARGE REQUIREMENTS FOR MUNICIPAL AND INDUSTRIAL DISCHARGERS.

Issue # 10: ALLOCATION OF LIMITED STATE AND FEDERAL GRANTS FOR SEWAGE TREATMENT TO THE REGION.

Issue # 11: LEVEL OF TREATMENT FOR WASTEWATER DISCHARGED TO THE OCEAN.

Issue # 12: INDUSTRIAL PRETREATMENT PROGRAMS TO PREVENT ADVERSE EFFECTS OF TOXIC POLLUTANTS.

Issue # 13: STRATEGIES FOR SLUDGE RESOURCE RECOVERY OR DISPOSAL.

Issue # 14: EQUITABLE FINANCING MECHANISMS FOR MUNICIPAL WASTEWATER SYSTEMS (USER CHARGES, INUSTRIAL COST RECOVERY).

Issue # 15: ALTERNATIVE MANAGEMENT STRATEGIES FOR ON-SITE WASTEWATER TREATMENT AND DISPOSAL.

Nonpoint Source Controls

Areawide policies are needed for the following issues:

Issue # 16: PREVENTIVE MANAGEMENT STRATEGIES FOR CONTROL OF POLLUTANTS IN STORMWATER RUNOFF.

Issue # 17: INTEGRATION OF WATER QUALITY GOALS IN STORMWATER SYSTEMS PLANNING AND OPERATION.

Issue # 18: INTEGRATION OF WATER QUALITY GOALS IN RESIDUAL WASTE SYSTEMS PLANNING AND OPERATION.

Issue # 19: PREVENTIVE MANAGEMENT STRATEGIES FOR RUNOFF AND EROSION CONTROL AT CONSTRUCTION SITES.

Issue # 20: PREVENTIVE MANAGEMENT STRATEGIES FOR CONTROL OF AGRICULTURAL SOURCES OF POLLUTION.

Issue # 21: PREVENTIVE MANAGEMENT STRATEGIES FOR MISCELLANEOUS NONPOINT SOURCES OF POLLUTION (AERIAL FALLOUT, SALT WATER INTRUSION, SILVICULTURE, AND MINING).

Issue # 22: FINANCING AND NEEDED REGULATORY AUTHORITY FOR PLANNING AND IMPLEMENTATION OF BEST MANAGEMENT PRACTICES FOR NONPOINT-SOURCE POLLUTION.

Water Conservation and Reclamation

Areawide policies are needed for the following issues:

Issue # 23: INSTITUTIONAL, LEGAL, SOCIAL, AND POLITICAL BARRIERS TO INCREASED REUSE OF MUNICIPAL WASTEWATER, INCLUDING EQUITY CONSIDERATIONS.

Issue # 24: MONITORING AND CONTROLS FOR WASTEWATER RECLAMATION PROJECTS.

Issue # 25: EMPHASIS ON WATER CONSERVATION AND RECLAMATION IN WASTEWATER FACILITIES AND WATER SUPPLY PLANNING.

ABBREVIATIONS AND SYMBOLS

AB 250	Lewis Air Quality Management Act
AF	Acre-Feet
APCD	Air Pollution Control District
AQMD	Air Quality Management District
AQMP	Air Quality Management Plan
ARB	Air Resources Board
AWMA	Aliso Water Management Agency
BBCCSD	Big Bear City Community Service District
BBLSD	Big Bear Lake Sanitation District
BLM	Bureau of Land Management
BOD	Biological or biochemical oxygen demand
BWRP	Burbank Water Reclamation Plant
CALTRANS	California Department of Transportation
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CMWD	Coastal Municipal Water District
COD	Chemical oxygen demand
CPCFA	California Pollution Control Financing Authority
CSDOC	County Sanitation District of Orange County
DWP	Department of Water and Power
DWR	California Department of Water Resources
EBCSD	Emerald Bay Community Service District
EIS	Environmental Impact Statement
EMA	Environmental Management Agency of Orange County
EMWD	Eastern Municipal Water District
EPA	U.S. Environmental Protection Agency
ETWD	El Toro Water District
FWPCAA	Federal Water Pollution Control Act Amendments
HTP	Hyperion Treatment Plant
HUD	U.S. Department of Housing and Urban Development
IRWD	Irvine Ranch Water District
JOS	Joint Outfall System
JWPCP	Joint Water Pollution Control Plan
LACSD	Los Angeles County Sanitation District
LAGWRP	Los Angeles-Glendale Water Reclamation Plant
LA/OMA	Los Angeles/Orange Metropolitan Area
LARTS	Los Angeles Regional Transportation Study
LAWD	Los Alisos Water District
LCP's	Local Coastal Programs
LVMWD	Las Virgenes Municipal Water District
mgd	million gallons daily
mg/l	milligram per liter
M-NWD	Moulton-Niguel Water District
mph	miles per hour
MWD	Metropolitan Water District
MWDOC	Municipal Water District of Orange County
MWDSC	Metropolitan Water District of Southern California
N/A	not available
NEPA	National Environmental Policy Act of 1969
NIWA	Newport-Irvine Waste Management Planning Agency
NOAA	National Oceanographic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
OCFCD	Orange County Flood Control District
OMB	Office of Management and Budget
OPR	Office of Planning and Research
PCB	Polychlorinated biphenyls
PL 92-500	Federal Water Pollution Control Act Amendments of 1972
PL 92-532	Marine Protection, Research and Sanctuaries Act of 1972
PL 93-523	Safe Drinking Water Act of 1974
PL 95-92	Clean Air Act Amendments of 1977
pphm	parts per hundred million
ppm	parts per million
RSA	regional statistical area
RWQCB	Regional Water Quality Control Board
SAWPA	Santa Ana Watershed Project Authority
SCAB	South Coast Air Basin
SCAG	Southern California Association of Governments
SCAQMD	South Coast Air Quality Management District
SCCWRP	Southern California Coastal Water Research Project
SCE	Southern California Edison
SERRA	Southeast Regional Reclamation Authority
SIP	State Implementation Plan
SLSD	South Laguna Sanitary District
SWP	State Water Project
SWRCB	State Water Resources Control Board
SWRP	Sepulveda Water Reclamation Plant
TCSD	Triunfo County Sanitation District
TDS	Total dissolved solids
TPD	tons per day
VMT	vehicle miles travelled
WRP	Water Reclamation Plants

Glossary

acre-foot: the quantity of water required to cover one acre to a depth of one foot; equal to 325,851 gallons.

advanced waste treatment: wastewater treatment beyond the secondary or biological state that includes removal of nutrients such as phosphorus and nitrogen and a high percentage of suspended solids.

anaerobic: pertaining to or caused by the absence of oxygen.

aquifer: an underground body of rock or similar material capable of storing water that can be removed and used for human purposes; an underground reservoir of water.

aquifer or groundwater recharge: additon of water to underground reservoirs by natural or man-made processes.

assimilative capacity: the ability of bodies of water to purify themselves after absorbing waste discharges.

biochemical oxygen demand (BOD): the requirement for oxygen when organic matter decomposes in bodies of water; oxygen demanding wastes lower dissolved oxygen levels in water which can harm aquatic life.

biocide: a chemical preparation used for the control or eradication of a pest or a plant; includes insecticides, herbicides and fungicides.

bio-accumulation: a process through which toxics are concentrated in an organism as it feeds and grows.

biological magnification (bio-magnification): a process through which toxins become concentrated as they are passed along the food chain.

coliform organism: any of a number of organisms common to the intestinal tract of man and animals whose presence in wastewater is an indication of bacterial contamination.

drainage basin: an area from which surface runoff is carried by a single drainage system such as a river and its tributaries; also called "watershed".

erosion: the weathering and displacement of rock and soil by the force of moving water, wind, and gravity.

estuary: the reaches of a river into which salt water enters and mixes with fresh water from land drainage.

eutrophication: over-enrichment of a water body by nutrients which leads to the excessive growth of aquatic plants, which in turn leads to the depletion of dissolved oxygen.

environmentally sensitive lands: Land types which may cause environmental or safety problems if improperly developed; this includes wetlands, estuaries, aquifer recharge areas, land overlying aquifers, steep slopes, erodible or poorly drained soils, river banks and beds, flood plains, and forests.

groundwater: water that occurs beneath the land surface; found in aquifers.

groundwater table: the upper level of an underground water body.

heavy metals: metallic elements with high molecular weights such as mercury, chromium and lead; they are generally poisonous to plant and animal life in low concentrations.

leachate: liquid that has percolated through solid waste or other media and has extracted dissolved or suspended materials from it.

mineralization (of water): the process of becoming impregnated with mineral substances such as dissolved solids.

nonpoint source: the diffuse discharge of waste into a water body which cannot be located as to specific source.

nutrients: elements or compounds essential as raw materials for growth and development of an organism.

pathogens: disease-producing bacteria or viruses.

percolation: downward flow or infiltration of water through the pores or space of a rock or soil.

point source: a specific site such as a municipal sewage treatment plant or an industrial plant which discharges wastes into a water body.

pretreatment: any process used to reduce the pollution load before wastewater enters the treatment plant.

receiving waters: rivers, lakes, oceans or other water bodies that receive treated or untreated wastewater.

regional statistical area (RSA): census tracts or districts used for county planning.

residual wastes: byproducts from the treatment of water and wastewater.

resource recovery: the process of obtaining useable materials or energy from wastes, particularly solid waste.

runoff: the portion of rainfall or melted snow that flows across the ground surface and eventually is returned to streams.

saltwater intrusion: the movement of saltwater into a body of fresh water, occurring in either surface or groundwater bodies.

sanitary landfill: a site for solid waste disposal using techniques that protect the environment.

seepage: water that flows through the soil.

septic tank: an underground tank that receives and treats domestic wastes from individual dwelling units.

silviculture: the cultivation of forest trees; forestry.

sludge: a semi-liquid mass composed of solids removed from sewage during wastewater treatment.

stormflow: the portion of discharge in a stream or drainage channel that is directly attributed to rainfall.

turbidity: reduced water clarity resulting from the presence of suspended matter.

wastewater: the spent water of a community; water carrying wastes from homes, businesses and industries that is a mixture of water, dissolved solids ans suspended solids.

wastewater reclamation: processing of wastewater for reuse.

watershed: a geographic area which drains into a particular water body.

wetlands, coastal: naturally vegetated areas between mean high water and the yearly normal maximum flood water level.